

19 of the 20 makes of motor cars embody essential parts made by Borg-Warner!

TRANSMISSIONS
TIMING CHAINS
OVERDRIVES
SYNCHRONIZERS
CLUTCHES

UNIVERSAL JOINTS AND
DRIVE SHAFTS
CARBURETORS
RADIATORS
TAPERED WHEEL DISCS



Executive Offices, Chicago. These units form Borg-Warner: AUTOMATIC TRANSMISSION • BORG & BECK • BORG-WARNER INTERNATIONAL • BORG-WARNER SERVICE PARTS • B-W SUPERCHARGERS, INC. • CALUMET STEEL • DETROIT GEAR • DETROIT VAPOR STOVE • INGERSOLL STEEL • LONG MANUFACTURING • LONG MANUFACTURING CO., LTD. MARBON • MARVEL-SCHEBLER CARBURETER • MECHANICS UNIVERSAL JOINT • MORSE CHAIN • MORSE CHAIN CO., LTD. • NORGE • NORGE-HEAT • NORGE MACHINE PRODUCTS • PESCO PRODUCTS • ROCKFORD CLUTCH • SPRING DIVISION • WARNER AUTOMOTIVE PARTS • WARNER GEAR • WARNER GEAR CO., LTD.

"A great new Havoline

plus-
a powerful selling campaign"



HAVOLINE — famous for its lubricating qualities for over forty years, is now greater than ever, thanks to a new, exclusive formula.

The introduction of New and Improved Havoline — the motor oil that *cleans as it lubricates* is backed up by a powerful, coordinated sales campaign: Havoline billboards now in all 48 states are seen by 50 million motorists a day! Full-page, full-color Havoline advertisements appearing regularly in leading magazines reach motorists in every community.

Millions of Sunday night listeners hear the Havoline messages on the Texaco Star Theatre radio program. For Texaco Dealers' local use — a promotion package consisting of station banners, window streamers, postcards and simulated telegrams, all tie in with this nation-wide selling campaign.

A great product — a great campaign. Just another example of why *Texaco Dealers are busy dealers!*

THE TEXAS COMPANY



**A Great Line-up
for
TEXACO DEALERS**

Sky Chief and FIRE-CHIEF GASOLINES

**HAVOLINE and TEXACO MOTOR OILS • MARFAK
CHASSIS LUBRICATION • REGISTERED REST ROOMS**

TUNE IN . Texaco Star Theatre every Sunday night starring James Melton. See newspapers for time and stations.

When writing to advertisers please mention Motor Age

MOTOR AGE

BEFORE YOU TUNE-UP



FIRST, add PERMATEX TOON-OYL to crankcase oil to dissolve sludge and gum binders that interfere with the smooth operation of valves, piston rings, oil lines and oil screens.

THEN you'll have a CLEAN ENGINE... ready for accurate mechanical adjustments!

PERMATEX COMPANY, INC., BROOKLYN 29, N. Y.

Rx
ADD 1 QUART OF
PERMATEX
TOON-OYL TO 5
OR 6 QUARTS OF
ANY TYPE OF
MOTOR OIL IN THE
CRANKCASE

YOU CAN'T BEAT

The Law of



**... and it's in your Favor
When You Stock and Sell**

~~DEPENDABLE~~
Champion

FOLLOW THE EXPERTS FOR MORE PROFITS

Averages!*



* Every impartial survey of the past ten years reveals
that most motorists prefer Champion Spark Plugs.

MORE PEOPLE PREFER CHAMPIONS

MORE PEOPLE ASK FOR CHAMPIONS

MORE PEOPLE BUY CHAMPIONS!

Spark Plugs

- STOCK AND SELL AMERICA'S FAVORITE SPARK PLUG

JULY, 1946

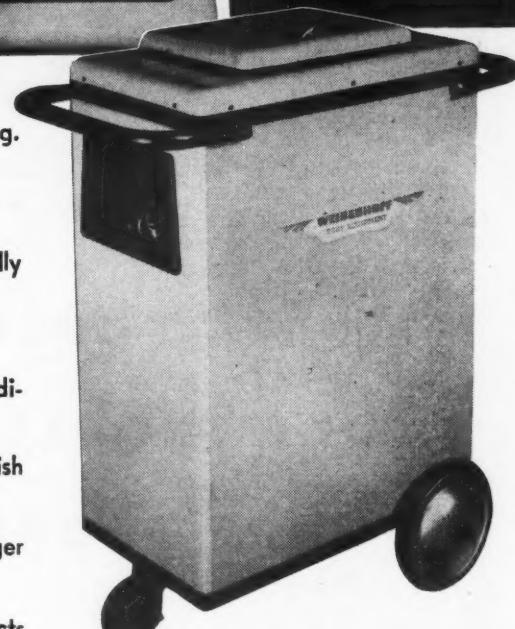
When writing to advertisers please mention Motor Age

WEIDENHOFF

BATTERY FAST CHARGER



FEATURING
BUILT-IN
FACILITIES
FOR
CYCLING OF
BATTERY
AUTOMATICALLY



- For efficient, reliable, safe and fast "while-you-wait" battery charging.
- Gives customers a special service being demanded more and more.
- Saves shop time. Batteries are charged right in the car.
- Investment and losses in rental batteries greatly reduced and practically eliminated.
- Battery can be charged while other services are performed.
- Easy to use. Start of charge comes in automatically with visual indication by red and green lights.
- Equipped with No. 0 Welding Cable. Normal voltage for correct finish rates. Eliminates overheating of charger and battery.
- An ideal point-of-sales machine for new batteries leading to a bigger and more profitable battery and electrical department.
- Builds good will. Gets a customer in a hurry on his way quickly. Attracts new customers. Gives regular customers a better break.
- Gives you those extra service dollars now rolling past your doors.

Write for information on the Model 100 Charger.

ENGINE ANALYZERS • BATTERY CHARGERS • MAGNETO TESTERS

JOSEPH

WEIDENHOFF
INC.

CHICAGO 24, ILLINOIS

TEST BENCHES • ELECTRICAL TESTING AND SERVICE EQUIPMENT

Easily rolled between closely parked motor vehicles. Operator has right before him all the controls, meters, signal lights and full instructions on the inside of protecting lid. With the lid down the meter and controls are protected.





MUFFLER

Blowouts
BECOME
ANCIENT HISTORY

... WHEN YOU INSTALL
INTERNATIONAL PARTS MUFFLERS

CONTINUOUS ELECTRICALLY WELDED
SEAMS: The metal is fused into one
solid bond. This exclusive feature of
International Parts Muffler construc-
tion makes blowouts IMPOSSIBLE.

PATENTED "DUO-LOUVE" DESIGN
causes the stirring up of the gases
in such a manner as to break up
sound waves and results in
SUPER-SILENCING. Cuts down
back pressure and prevents for-
mation of clogging carbon.

U.S. Patents
2,343,152
2,183,296
Canadian
Patent
395,409

A Complete Line
of Quality Automotive
Replacement Parts



TESTED and APPROVED by
UNDERWRITERS' LABORA-
TORIES. The "U.L." mark of
approval, clearly embossed on
each Muffler is your guarantee
of safe operation.

At All Authorized "I.P." Distributors
The World Over.

JULY, 1946

When writing to advertisers please mention Motor Age

When you sell an International Parts
Muffler you sell the most dependable
muffler in the world. Exhaustive tests
have proved conclusively that its
continuous electrically welded seam
construction is complete protection
against blowouts and gas leakage.
To those familiar with "I.P." Mufflers,
blowout-threat is ancient history.

Every International Parts Muffler is
unconditionally guaranteed against
blowouts and leakage for the life of
the motor vehicle in which it has been
installed.

INTERNATIONAL PARTS
MUFFLERS

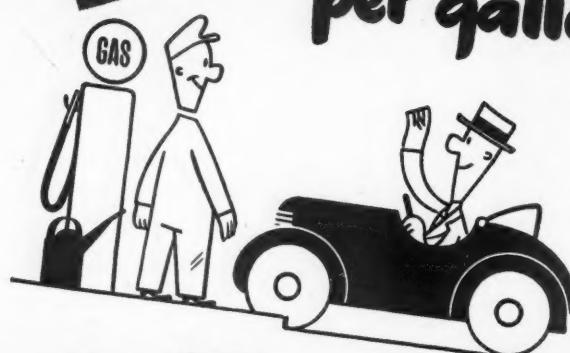
EVERY MODEL thoroughly road tested for top
efficiency on the vehicle for which
it was designed

INTERNATIONAL PARTS CORP.
CHICAGO 5, U. S. A.

INTERNATIONAL PARTS (CANADA) LTD., TORONTO



for more
MILES
per gallon



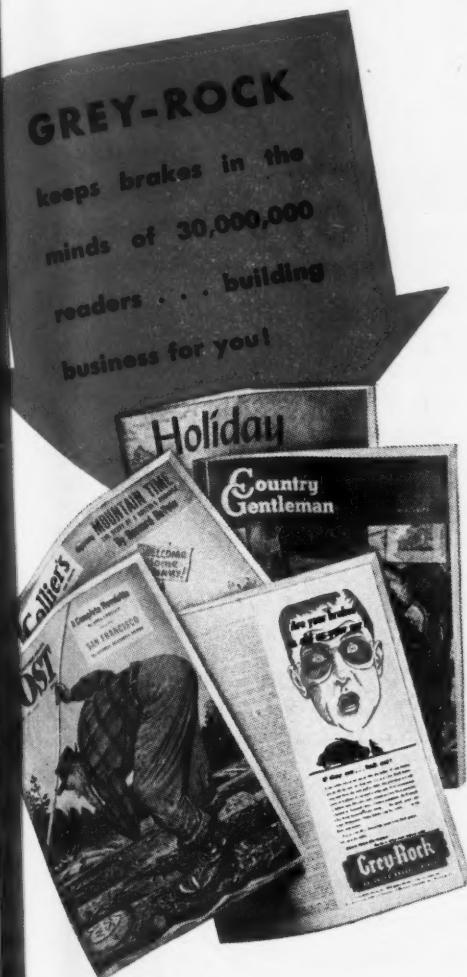
GET
Pedrick

"HEAT-SHAPED"
PISTON RINGS



"**HEAT-SHAPED**" RINGS give your customers the greatest assurance of more miles per gallon, greater fuel savings, more power and pep, and longer engine life. And only PEDRICK piston rings are "Heat-Shaped." Ask your jobber salesman for Pedrick rings in guaranteed Engineered Sets. WILKENING MANUFACTURING CO., Philadelphia 42, Pa. In Canada: Wilkening Manufacturing Co. (Canada) Ltd., Toronto.

"ARE YOUR BRAKES
IF THEY ARE...LOOK OUT!"



These four widely read magazines carry Grey-Rock ads regularly!



Illustrations like this, featured regularly in Grey-Rock's smashing 1946 national consumer campaign, are making your customers more and more brake-conscious. Now as never before, they want Grey-Rock safety on all four wheels!

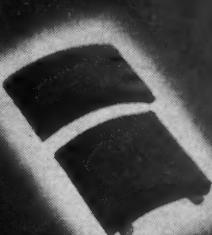
Give them Grey-Rock Balanced Brake Lining . . . for smooth, certain stops. Follow Grey-Rock service methods, based on National Safety Council standards.

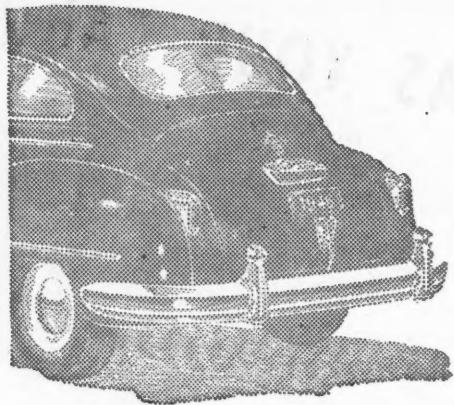
Your Grey-Rock jobber has *balanced linings...right* for the job, *ready* to use.

UNITED STATES ASBESTOS DIVISION
of Raybestos-Manhattan Inc., Manheim, Pa.

Grey-Rock

BALANCED BRAKE LININGS



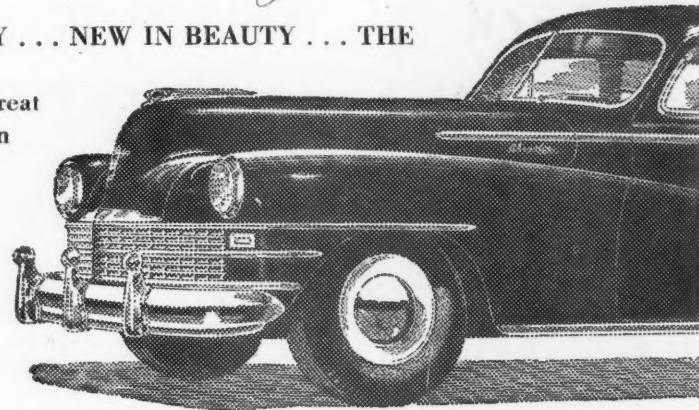


The beautiful Chrysler

NEW IN PERFORMANCE . . . NEW IN SAFETY . . . NEW IN BEAUTY . . . THE SWEETEST CAR A DEALER EVER SOLD . . .

with 13 basic mechanical advances—including a great new Chrysler Hydraulically operated Transmission and new Improved Hydraulic Braking System . . . with 15 basic advances in exterior features including new front fenders of famous Chrysler "Newport" design, a massively beautiful new grille, and new "wrap-around" bumpers . . . with 9 basic interior advances—including lovely new instrument panels, and a new steering wheel of chrome and plastic.

CHRYSLER—Division of Chrysler Corporation



The finest new car of all!

... WITH HYDRAULICALLY OPERATED TRANSMISSION AND gyrol FLUID DRIVE



Here's a Deal That Gives You a Quick, Substantial Profit on a Small Investment

This colorful Wagner CoMax brake lining merchandiser provides wide coverage of 1935 to 1942 models with only six sets of fast-moving CoMax. These six fast-moving popular-car sets will handle such a high percentage of your reline jobs that you enjoy all the benefits of a large stock of brake lining without the greater initial cost and storage problem.

By replacing sets as they are used you maintain a constant supply of fast-moving CoMax lining, conveniently stocked and attractively displayed. The wide coverage provided by

Now is the Time to Build for the Future

This six-set merchandiser means that your small investment in brake lining is quickly converted into a good profit. The CoMax merchandiser is available in two assortments, FL-1025 and FL-1026, as indicated by the two labels reproduced below. See your jobber about a Wagner CoMax merchandiser today. You pay nothing extra—just the regular price of the six sets of CoMax. Display one or both in your shop, or on the counter to remind your customers to have their brakes relined NOW—for quick, safe, smooth stops.

Make sure your customers are so well pleased with the brake lining you furnish that they'll come back to you for the next reline and meanwhile tell their friends about the good brake service you give. Wagner CoMax is a great help in building up a following of enthusiastic repeat customers. CoMax is not just another lining; it is a superior-quality product having the following excellent

features: (1) long-lived, (2) reinforced backing, (3) non-compressible, (4) uniform texture, (5) easy on drums, (6) excellent for high speeds, (7) quiet, (8) smooth, (9) ageproof. Get acquainted with Wagner CoMax brake lining—ask for Catalog BU-128, addressing your request to Wagner Electric Corporation, 6498 Plymouth Avenue, St. Louis 14, Missouri.

DODGE	
WC 145 DC	1935-36 51-52 1/2" (Front)
	1935-36 51-52 1/2" (Rear)
DESO TO	
WC 245 DC	1936 51-52 1/2" (Front)
	1936 51-52 1/2" (Front)
CHRYSLER	
WC 245 DC	1936 51-52 1/2" (Front)
	1936 51-52 1/2" (Front)
PLYMOUTH	
WC 145 DC	1941-47 51-52 1/2" (Front)
	1941-47 51-52 1/2" (Front)
FORD	
WC 517 DC	1942-39 V-8 Pass.
	1942-39 V-8 Pass.
	1942-39 Mercury
CHEVROLET	
WC 633 DC	1942-39 All Passenger Models
	1942-39 1/2 Ton Truck (Front)
DESO TO	
WC 245 DC	1937 51-52 1/2" (Front)
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WC 517 DC	1942-39 V-8 Pass.
	1942-39 V-8 Pass.
	1942-39 Mercury



NEW BATTERY

HERE'S WHAT MAKES THE DIFFERENCE

Unique new design and construction gives
Auto-Lite "Sta-ful" more than 3 times
the liquid reserve of ordinary batteries.



Both Batteries Filled

Liquid Level After Equal Evaporation



Auto-Lite "Sta-ful" Ordinary Type



Auto-Lite "Sta-ful" Ordinary Type

Illustrations above show the result of equal evaporation in the Auto-Lite "Sta-ful" Battery and other batteries. As shown by illustration on the far right, plates of ordinary batteries are exposed sooner by water loss and then become inactive faster.

Here's the new battery that needs water only three times a year in normal car use. Think how the revolutionary "Sta-ful" principle will make car-owners talk, look and buy. Remember, Auto-Lite also gives oversize electrical capacity plus Fibre-glass in-

sulation to deliver longer life than batteries without the Auto-Lite "Sta-ful" features. The Auto-Lite "Sta-ful" Battery is backed by the biggest promotion in Auto-Lite's history. It's new, it's revolutionary . . . and it's yours if you sign up now.



AUTO-LITE

NEEDS WATER ONLY 3 TIMES A YEAR...

IN
NORMAL
CAR USE

Lasts longer, too!

Here's how
it works...

Auto-Lite "Sta-ful" needs water only 3 times a year in normal car use. You have less troublesome service work and "Sta-ful" long life and full power wins friends for you, boosts sales all along the line.



Tune in the

AUTO-LITE RADIO SHOW

Starring

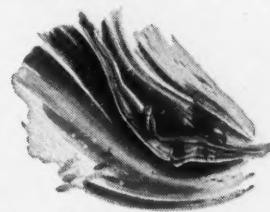
Dick Haymes

Helen Forrest, Gordon Jenkins' Orchestra and Chorus

Thursday, 9:00 p. m., on CBS

Submerged...

Plates stay wet longer because the "Sta-ful" Battery has more than 3 times the liquid reserve to help deliver capacity starting power, longer life.



Parched and Dry...

Plates of ordinary batteries are exposed sooner by water loss . . . lose power faster because their liquid reserve is less than one-third that of "Sta-ful" Batteries.



A GREAT BATTERY BACKED BY GREAT PROMOTION

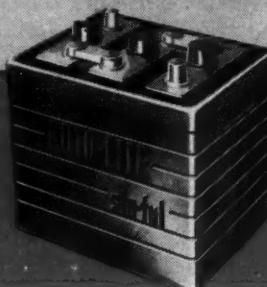
Sign up with Auto-Lite and get advertising in leading national magazines and farm papers, backing from big-time network radio show, free seasonal promotional kits, original equipment benefits. Ask your jobber or write

AUTO-LITE BATTERY CORPORATION TOLEDO 1, OHIO

Manufacturing Plants at: Niagara Falls • Indianapolis • Atlanta • Oakland • Oklahoma City • Toronto

BATTERIES

THE ORIGINAL EQUIPMENT LINE





KESTER

Cored Solder

FOR EVERY AUTOMOTIVE USE



ONE SURE WAY... to Make a Tank Tight

- There are countless repair jobs that Kester Cored Solder can help you do better in shorter time, and at lower cost. They're in daily use in the biggest, best service shops; they're standard with most of the equipment builders. Make them your stand-by, too.
- Kester Rosin-Core Solder makes electrical connections stay put, will not injure insulating material or cause corrosion, ends terminal resistance.
- Kester Acid-Core Solder for general work makes a tight, clean, permanent union that stands up under shock, bending, vibration, contraction, expansion.
- Get Kester Cored Solder from good supply dealers everywhere.

KESTER SOLDER COMPANY

4242 Wrightwood Avenue, Chicago 39, Illinois

Eastern Plant: Newark, N. J.

Canadian Plant: Brantford, Ontario

MOTOR AGE

With Which Is Combined AUTOMOBILE TRADE JOURNAL

FOR AUTOMOTIVE SERVICEMEN

Vol. LXV, No. 8

July, 1946

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**MAREMONT MUFFLER
REMOVING TOOLS MAKE
RUSTED ONES EASY !**

MAREMONT MUFFLER REMOVAL AND INSTALLATION KIT

With this handy kit, you can handle your muffler removal and installation jobs more quickly, easily and profitably... PIPE PEELER peels back narrow strip, breaking rust tight connection in a few seconds... ALL ANGLE STEEL SAW quickly cuts pipe or muffler tube. This kit is available to dealers at no extra cost. So, see your distributor today about obtaining this useful kit... The modern, easy way of muffler removal and installation.



Also manufacturers of Tail Pipes, Exhaust
Pipes and Alloy Steel Springs

**SINCE
1877**

MAREMONT

MUFFLERS

Maremont Automotive Products, Inc.
General Offices: • South Ashland at
16th Street • Chicago 8, Illinois

For blow-by control, too...



but 26 basic designs

OF SEALED POWER PISTON RINGS



*Individually
Engineered*

THREE'S a lot of talk about the right rings for oil control, but blow-by control, too, is important. In fact, it's one of the four essentials for balanced performance in piston rings. You're sure of ALL FOUR—oil control, blow-by control, low friction and minimum wear—when you use Sealed Power Individually Engineered Ring Sets. Each set is made up from twenty-six (26) basic designs. Whatever the make, model or cylinder wear condition, there's a Sealed Power Set specifically engineered to do the best possible job. Sealed Power has been refining these sets for seven years, has been producing rings for car, truck and engine manufacturers 35 years. For balanced performance, re-power with Sealed Power Motor parts. Sold by leading distributors. Sealed Power Corporation, Muskegon, Michigan and Stratford, Ontario.

Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves, Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts.

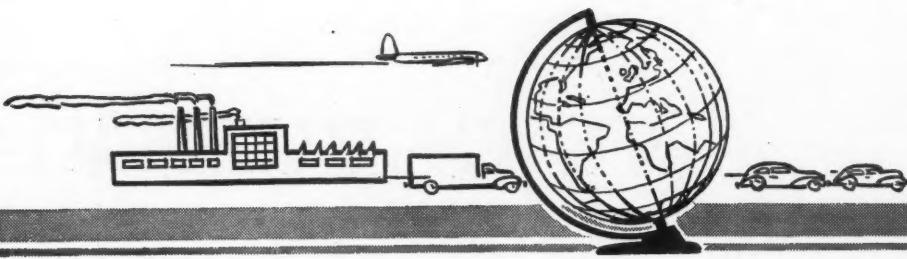
Keep Your Savings Bonds!
Get \$4 for \$31

SEALED POWER PISTON RINGS

BEST IN NEW CARS! ★ BEST IN OLD CARS!

NEWS BULLETIN

- ★ Production has started on the model 66 Series Olds. This is the 100 H.P., 119 inch wheelbase job.
- ★ It is not too optimistic to believe that pre-war discounts of car dealers will be back before August 1st.
- ★ No new Packards are to be expected before 1947.
- ★ According to the latest report from the safety check being made by the International Association of Police Chiefs, one-third of the vehicles on the road are unsafe.
- ★ Government owned corporations will cost the nation's taxpayers 2 billion dollars more than they have been told would be the case.
- ★ Germany was building an unconventional 10-cylinder air-cooled gasoline engine for use in military vehicles when stopped by V-E Day.
- ★ The CIO and AFL are urging labor to increase productivity so as to hold down prices in case Congress fails to revive O.P.A.
- ★ Due to long July 4th weekend observed by most car factories, car production dropped from 64,015 to 46,810.
- ★ Shortage in copper may cut July car production.
- ★ G. M. production of passenger cars for the first six months was 165,746 vehicles, about 14 per cent of the same period in 1941.
- ★ Farm tractors registered a gain of 78 per cent in May.
- ★ Stewart Warner has announced that prices of its products will not be permitted to exceed O.P.A. ceilings.
- ★ Shortage of scrap which has been menacing the steel industry, is even more acute now because of uncertainties following termination of O.P.A.
- ★ Single lever shifting of 10 speeds is announced by Mack. Pre-selection of compound ratios is by a "flipper" on the gearshift lever.
- ★ Pontiac has inaugurated a new parts and accessory store merchandising program to establish new avenues through which its dealers can secure a greater share of the ever-increasing parts and accessory market.
- ★ Packard zone business managers have just concluded a five day conference on sound business management procedures toward securing profitable dealer operations.
- ★ Willys is announcing a new jeep station wagon with an all steel body.
- ★ Union strategists are endeavoring not to antagonize voters away from pro-labor candidates but an increasing number of voters are becoming convinced that labor and Communist Russia are one.
- ★ Strike at Minneapolis-Moline has ended.
- ★ Crosley is producing cars at the rate of 15 per day and expects to reach a daily volume of 75 by August.
- ★ Reuther has asked union locals at Flint, Mich. to reopen wage negotiations with G. M. because of O.P.A.'s demise.
- ★ Auto production still 50 per cent under 1941 monthly output reports George Romney of A.M.A.
- ★ In viewing current food prices it must be remembered that in addition to O.P.A. ceilings, subsidies were also dropped.
- ★ Tucker Corp. leases huge Dodge-Chicago Plant for five years.
- ★ An increasing number of economists are emphasizing that consumers do not have as much actual cash ear-marked for cars, radios, washers, etc., as was at first estimated.
- ★ Ford has wired all dealers that there is to be no increase in the price of Ford Cars.



Watchful Waiting Is Present Policy

At the outset of this month, immediately after the death of OPA, things were at sixes and sevens in the automobile industry so far as prices and labor troubles were concerned. Upon the action of Congress in either blowing a breath of life into the corpse of OPA, or giving it a decent Christian burial, rested the course of the industry for the next few months. In either case, the result boded no good for the automobile makers, since a continuation of price controls would present the same difficulties it had previously. Unless greatly modified, and letting OPA remain in a state of suspended animation, it would undoubtedly touch off a series of wage demands and ultimate strikes.

Car manufacturers made no immediate move to raise prices of their vehicles when price restrictions expired. A survey showed that they were following a course of watchful waiting to see what the ultimate fate of OPA would be before raising prices. One spokesman pointed out that it would be bad public policy to raise prices, and then later have to lower them if OPA were restored. It also would lead to unbounded confusion, he said, if prices had to be adjusted first upward and then downward in the course of a few days or weeks.

Another element of concern is that prices of cars to the consumer are almost certain to rise either with or without restored controls, and regardless of whether the manufacturer increases his price. The reason is that dealer margins, which had been cut about 7 or 8 per

cent by OPA, are likely to be restored. The vetoed OPA bill contained such a provision, and it is thought certain that if new controls are enacted this provision will be included. Consequently, prices would rise from \$80 to \$100 on the lowest priced cars, and any additional increase by the manufacturer might well boost the price, now considered by many as too high, out of reach of millions of potential buyers. The manufacturers generally believe that they should have some kind of price relief, but are confronted by the dilemma of forcing themselves away from their volume market.

Whether or not present prices will have to be increased, or any future increase retained, depends to a large degree on what labor productivity studies show when volume production is attained. An industry spokesman says that it is impossible to tell now how well labor is producing, but that there are signs that productivity is improving. He said that when lines are full and the tempo of production is at high pitch, the company might be agreeably surprised to find that very near pre-war efficiency is back and that prices could be held. In general, however, the outlook is for some further increases in the price of cars before there is a reduction.

The low-priced car field is uninhabited today, says Leonard Westrate, Motor Age's Detroit New Editor in his article "When Will Low-Priced Cars Come Back" which appears on pages 20 and 21 in this issue of Motor Age. Lightweight cars may make an appearance in 1947, and dealers can expect some new designs in this respect. Read this interesting forecast of what may occur in the low-priced field.

Weekly Production of Cars and Trucks in U. S. and Canada*

Week Ending	1946	Corresponding Week in 1941
Jan. 5.....	13,920	76,690
12.....	23,340	115,935
19.....	28,465	124,025
26.....	29,410	121,948
Feb. 2.....	29,295	124,400
9.....	23,785	127,675
16.....	21,555	127,510
23.....	19,410	127,740
Mar. 2.....	17,575	126,550
9.....	23,050	125,915
16.....	35,020	131,410
23.....	37,285	123,305
Apr. 6.....	47,735	116,255
13.....	49,425	99,260
20.....	57,565	99,945
27.....	64,620	108,165
May 4.....	67,060	130,610
11.....	71,335	132,380
18.....	48,565	127,255
25.....	53,020	133,560
June 1.....	31,895	106,395
8.....	43,175	133,645
15.....	50,206	134,682
22.....	53,930	133,565
29.....	64,015	127,926
July 6.....	46,810	96,457
Totals.....	1,094,536	3,257,868

*Compiled by Ward's Automotive Reports.

Production Picture Remains Unchanged

As an indication of the crippling effects of strikes, the OPA and the Government's labor policy, in the first six months of the current year, the five G.M. car manufacturing divisions produced only 165,746 passenger cars compared to 1,206,479 in the first six months of 1941. While the two G.M. truck divisions produced 83,761 and 226,758 units in the same two corresponding units. In June of this year, G.M. produced 61,858 passenger cars as against 203,544 produced in June, 1941. The same general situation exists in other car factories and other industries, and will continue as long as current governmental policies continue.

SLANTS ON THE NEWS



As We Go to Press

ONE fact has become crystal clear during the week following the demise of OPA, and that is there is not the slightest inclination among parts, equipment, car and accessory manufacturers to arbitrarily increase prices. Their one desire is to give the country the production it has so long needed, and only at prices that will yield a fair profit. This was brought out in a telephone survey made to 25 of the leading manufacturers just before going to press. That there will be price increases, was agreed to by all, but it was also emphasized that many of the increases had already been approved by OPA. The consensus was, however, there would be few increases until after the present battle for a new OPA bill had been lost or won, according to the individual viewpoint. And it was also agreed that the elimination of price ceilings would speed production of certain items whose production OPA ceilings had made impossible.

Many of the price increases were granted by OPA because the product had been improved either as the result of better design or material. For instance, the muffler manufacturers adopted a special coated steel which was more corrosion-resistant, and therefore increased the life of the muffler.

Other price increases were to manufacturers who were new in the particular field and in accordance with OPA policy, such companies were granted prices based on their current costs while other producers were forced to base their prices on pre-war prices. This latter group believe that, with their long familiarity with the product,

the market and the manufacturing processes, their eventual price will be materially lower than any of the newcomers in the various fields. In the jack industry alone, there are 800 to 1000 new companies competing for the business.

Undoubtedly the trade is expecting higher prices as is indicated by increased requests being received by manufacturers for their latest price lists. But the producers are taking a determined stand, and will not let prices run wild, realizing that repairmen will be quick to resent any such situation.

Prices on used cars are chaotic, to say the least. Prices advertised in leading metropolitan daily papers show a most confused picture with a wide spread between the high and low prices asked for the same make and models. Dealers and association secretaries emphatically assert that every effort is being made to hold the line with some few dealers quoting extremely inflated prices to see just how much the market will stand. Car factories are of the opinion that rising new car production will soon put the brakes on any tendency for used car prices to skyrocket.

Opinion of car dealers, repairmen and car factory executives strongly oppose renewal of OPA.

Aluminum alloy bearings are now receiving the earnest attention of automotive engineers. Used successfully in Diesel engines, the new bearings may find possible application in automobile engines of the future. For details on the new aluminum alloy bearings, read the article on page 22 of this month's Motor Age.

Objective View Needed To Analyze Price Status

WITH the buying public and Congress still running around in circles over the abrupt demise of the OPA—some viewing the future with alarm and others with relief, a dispassionate view of the situation clearly reveals that while apparent prices for general commodities have risen, real prices in many cases have dropped. Many farm products, long scarce except in black markets, have again made their appearance and such basic foodstuffs as wheat, corn, beef and flour sold well below June's actual (including black market) average prices. Some commodities have even dropped below former legal limits. Hog prices have dropped, and there is a general movement of live stock to the consumer.

It is unfortunate that so much publicity of the scare variety is being given to the occasional spectacular advance. Also, too many individuals when viewing and discussing prices ignore, or are not aware, that subsidies have been withdrawn from many farm and dairy products, and that it's only natural that prices should advance an amount equal to the subsidies. These subsidies were paid by the taxpayer's dollar, and as they will no longer be a part of the Governmental budget, a tax reduction is to be expected.

Another error commonly made when discussing the current price situation is the assumption that OPA prices are actual prices. That is incorrect, as the actual price could only be obtained by averaging OPA and black market prices after deducting any subsidies.

WHEN . . .

Will

FOR all practical purposes, there is no low priced regular size automobile today. Admitting that the term "low-priced" may be a matter of relativity or definition, it still is obvious that what was considered the low-priced field before the war now is uninhabited. Then any of the "Big Three"—Ford, Chevrolet, and Plymouth—could be delivered to the buyer, ready to drive away from the salesroom for considerably under a thousand dollars. Now the buyer has to put down a minimum of about \$1,100, and in most cases, it runs considerably more than that. Even the Crosley, which is not a fullsize car and is not considered a competitor to the Big Three, has a retail list price of \$749, which means that when taxes, transportation, and other charges are added the delivered price will not be far from \$850.

It is not enough to say that the reason for present higher prices in the former low-priced field are the result of increased costs, and a generally higher price level. These factors, of course, have been greatly instrumental in jacking prices up much higher than they were before the war; but they only indicate an exaggeration of the trend that developed back in the last few years before the war. In 1939, for example, the lowest delivered price for a Chevrolet, 5-passenger, 4-door sedan was \$689. It rose in '40, '41, and '42 to \$740, \$795, and \$907 respectively. Ford and Plymouth

comparable models showed about the same trend in price increases. 1946 prices for these same comparable models, in approximate figures, are Ford, \$1,150; Chevrolet, \$1,075, and Plymouth, \$1,215. It should be remembered in connection with these 1946 prices that they represent the price near the factory and with no accessories, and do not by any means indicate prevailing average prices. In addition, if present dealer discount absorption of about 7½ per cent is knocked out of OPA regulations, as now seems pretty certain, the prices would go up another \$80 to \$100 on these cars.

In addition to the obvious conclusion that car prices

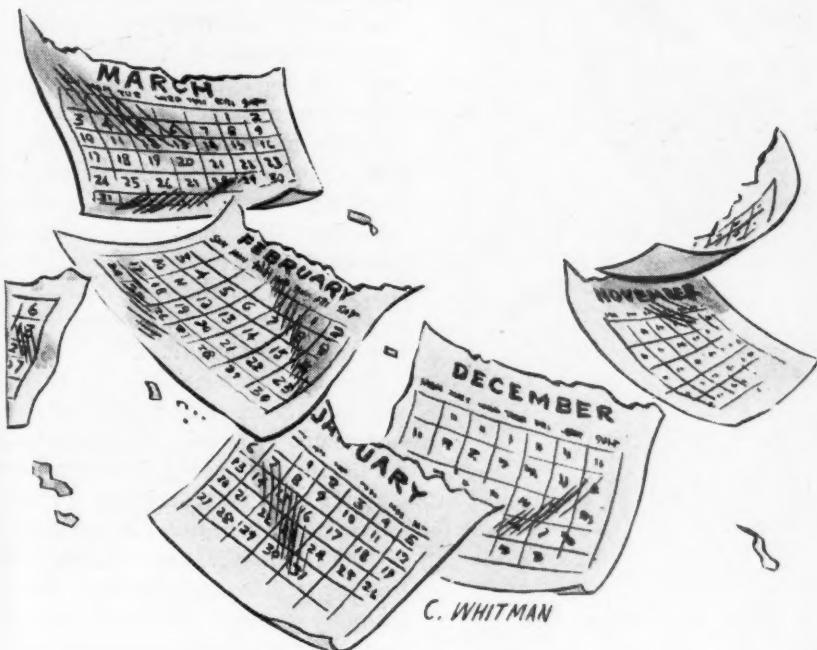


would rise coming out of a depression, automobile manufacturers are aware of other factors which lead to higher prices. The simple fact is that in the past few years automobiles have been embellished, enlarged, made heavier and more powerful, and generally fancified and tricked out in plush accoutrements until they no longer bear any resemblance to the rather simple, serviceable, and unpretentious cars of a decade or more ago. This is not to say that improvements are not in order, for to do so would be to refute the experience of the industry, which has always been to build as good a car as possible at the lowest possible

Low-Priced Cars Come Back?

Possibility of cars entering low-priced field increases as manufacturers speed production plans and erect new buildings

By LEONARD WESTRATE



cost. Nevertheless, the manufacturers recognize that pressure from the public, and from competition to build into an automobile all the refinements demanded has resulted in increased costs which have taken the cars out of their former price classes.

The transition from the gingham and calico class into the silk and satin category is causing considering apprehension among manufacturers and dealers alike. It is the real reason lying back of announced intentions of Ford and Chevrolet to introduce some time next year, a lightweight car to sell at a lower price than current standard models. While Chrysler has not yet

indicated definitely that it will enter the field with a competitive car, K. T. Keller, president, said a few weeks ago that if the market exists, and if other companies have a low-priced car, Chrysler will be ready with something competitive. It also is reported that some of the independents have lower priced models in the works.

Ultimate price of the new lower cost cars can be surmised in only a general way. Henry Ford II, president of Ford, said last year that it would probably be about 25 per cent under the regular Ford line. One company spokesman says that it would have to be about that much under regular lines in order to make it attractive to the buyer. Chevrolet and Plymouth offerings would have to be in line with the Ford price, of course.

Details of the new Ford and Chevrolet cars are naturally a closely guarded secret. However, it is definitely established that they will be a completely new design and will not be stripped down models of the regular line. The generally prevailing idea in Detroit, gleaned from sketchy information, is that the cars will be full size so far as tread is concerned, although the wheelbase may be shorter. The lightweight factor probably will result from smaller engines and correspondingly lighter construction of other members.

However, the chief item of consideration is the lowering of cost. This will be accomplished by examining closely every part of the car to see if cost or weight can be cut by a change in design that will permit lower tooling cost or less scrap. In essence, all the accumulated skill and technique of the company will be brought to bear with the greatest possible concentration on cutting manufacturing cost to the bone. It is likely too, that appointments will be simple, and that the car will not be fitted with much gadgetry, although it will be equipped with all necessary accessories for satisfactory operation.

There has been considerable comment in Detroit
(Continued on page 48)

Notes On the New Aluminum Alloy Bearings

Car factories study new bearing already in use in Diesel engines



ALIFE expectancy almost ten times greater than that obtainable from other heavy-duty bearing material is apparently possible from the new Aluminum Alloy Bearings now being manufactured for use as original equipment only.

Advantages of the new material include, high resistance to fatigue and "squeeze," which means a long and happy life; resistance to corrosion permitting the carefree use of additive oils, excellent heat transferring ability which prevents localized high temperatures, and

low Brinell hardness which means little likelihood of scored journals resulting from lubrication failure.

Normally, the new material is used in cast bearings only and service applications have, therefore, been limited to Diesel engines where the alloy's resistance to fatigue at high unit pressure is a great advantage. Some thin-walled steel-backed alloy bearings are becoming available, and because of their good bonding and resistance to high bearing pressure, will probably find ready acceptance in the gasoline engine field.

Although just coming out of the experimental stage, this new material has been well tested. Development work started in 1936 and, except for a brief halt during the aluminum shortage at the start of the war, has been going on steadily ever since. The first alloy developed employed some nickel in the combination. But continued research proved that silicon had more of the magic touch so the newest alloy is a combination of tin, copper, silicon and pure aluminum.

The new material is very easily and quickly machined, thus affording many economies in manufacture. In most cases, however, the engines must be redesigned for the bearings as there must be a greater oil flow and oil space within the bearing than is normally used. This fact prevents its use as a replacement part in existant engines. The pressure between the bearing's ends at the parting line is very critical, as it controls the initial crush on the bearing and so controls the available space for expansion. In this connection the maintenance man will be interested in the engineering limitations on aluminum alloy bearings as they will affect his repair operations. Of primary importance is the oil clearance which should never be less than .001 in. per inch of journal diameter. Next, although there must be good contact

(Continued on page 56)

Swing Shift Service Builds Profits

This Mid-west shop repairs cars while the customers sleep through its swing shift service

WHEN William Scott, owner of Scotty's Auto Service, Chicago, Illinois, admitted that half of his customers were asleep, he smiled. "I don't mean they're asleep mentally," he explained. "They're just taking advantage of a method of auto repair never before offered them, to my knowledge."

It all began this way. When Scott discovered his shop was not pulling in enough business, he decided to do something about it. He did . . . and that "something," according to him, increased business over 30 per cent! He simply ran the following advertisement in a

By FRED W. AMANN

number of local newspapers:

*"Don't Be Without Your Car . . .
We Can Repair It For You . . .
WHILE YOU SLEEP!"*

The "while you sleep" idea seemed to catch the fancy, and meet a very real need of many of today's car owners. Of course, Scott had to put two new men on nights, but the increased business fully warranted the additional outlay in salaries. And with three mechanics on days (including himself) Scott began turning out two major or four to five minor

repair jobs every twenty-four hours, replacement parts being available. The night crew customarily finishes up "heavy" work, such as ring and rebore jobs, begun by the day men. A straight ring job, Scott promised the customers, would be ready the day following that when work began on the car. Motorists wanting a valve grinding job can have their car back in half a day. Or they could bring it in in the evening and drive it to work the next morning.

Usually, the "one night" jobs consist of valve grinding, brake relining, wiring, radiator repairs, etc. The heavy work is begun by the day shift and almost always completed during the night, so as to be ready to roll before the eight o'clock whistle blows the next morning. Miscellaneous jobs of the small and odds and ends type are handled night and day, along with the bigger jobs. Scott solves the distasteful night shift problem by rotating when agreeable to two men, or offering a higher rate to a steady night man.

Scott plans to open another repair shop in one of Chicago's west side suburbs. He feels certain his special service to customers will meet with success there also.

Yes, while other repair men are locking their doors and shutting up shop for the night, William Scott hands his tools to the incoming night crew. He points out that overhead and rent does not stop with the five o'clock whistle, and that an empty shop at night is a drain on the monthly "net" returns. So, while his customers sleep, Scotty's Auto Service is "hitting on all six," and making its owner a nice little "bonus" every month because he employed a new idea.

This round-the-clock service helps to keep shop volume booming.



"Isn't it time you stop chuckling and gloating? That was a month ago the factory service instructor knocked all the skin off his knuckles, showing you how easy it is to install a radiator hose."

A Miss Almost Stumps Pop.



MOTOR AGE
BASIC COURSE FOR
MECHANICAL TRAINING

THANKS for the order, Pop," said Jack Davis, the Glenrock jobber as he snapped shut his order book and shoved it into a baggy pocket. "Things must be looking up around here."

Pop, leaning back in the office swivel chair, drummed on the arms with his gnarled fingers. "We're doin' all right," he said, "but for the last few days we've been pretty quiet. In fact, it's been so quiet—" Suddenly his words were drowned out by loud shouts from the shop.

Pop looked at Davis a little sheepishly. Davis grinned. "That's no way to bellow at customers," he said, "even if you have got them over a barrel these days."

"That ain't no customer," said Pop. "That's a couple of my contented mechanics. If you'll excuse me a minute—"

"Sure. But remember nobody ever accused you of keeping your temper."

"The things I gotta put up with," said Pop, "would make a saint swear."

When he went out to the shop, he found Larry Tate and Tommy Winters shouting at each other beside Frank Monroe's Studebaker. Larry was waving his arms to lend emphasis to his argument.

"Aw you're nuts!" he said as Pop approached.

"I did everything you told me," retorted Tommy, "and the car still misses."

"You musta done somethin' wrong," said Larry.

"I didn't!"

"Are you callin' me—" began Larry.

"Break it up," said Pop. "They can hear you all the way over at city hall. You don't want to wake up none of them political drones, do you?"

"We ain't got no time for jokes," said Larry. "This smart apprentice of yours loused up another job on me."

"I did not," protested Tommy.

"Why you—"

Pop held up a hand like a traffic cop. "That's enough," he cut in. "You can't lick no trouble by beatin' your gums. What's wrong?"

"Frank Monroe brings this crate in this mornin'," said Larry, gesturing like a salesman in a walk-a-flight-save-a-dollar clothing store. "He says it spits back through the carburetor and misses at high speed."

Pop laughed. "How would Frank ever know what it done at high speed?" he asked. "The way he drives a truck, you'd think he didn't know how to release the brakes."

"On his trucks, yes," said Larry. "But he's got governors on 'em so his drivers can't wind 'em up. But when he gets into his own car, he ought to wear chaps and a sombrero. He's the wildest cowboy you ever seen."

"Okay," said Pop. "So Frank's a cowboy. But what'd you do about lickin' this highspeed miss?"

"Everything we could do," said Larry. "At least I told the kid to do it."

"And I did," said Tommy.

"What did you check?" asked Pop.

Tommy glanced at Larry.

"Go ahead and tell him," said Larry.

"Well," said Tommy, "I checked the compression on

**A little headwork enables Pop O'Neill to
find the source of trouble in the 52nd
article of this popular Motor Age series**

● By J. EDWARD FORD ●

all the cylinders."

"How was it?"

"Good. And," he added to show he was learning something about the business, "it was practically the same on every cylinder. Then I checked the ignition timing. It was a little late, so I advanced it."

Pop ran his fingers through his white hair. "What about the automatic heat control valve?" he asked. "Wasn't stuck shut, was it?"

"No," said Tommy. "Then I checked the carburetor. The mixture was okay."

"I told him to clean it," said Larry.

"It wasn't dirty," said Tommy, "But I cleaned it anyhow. I even dunked the air cleaner."

"How was the choke valve?" asked Pop. "Sometimes it don't open all the way."

"It was all right. And so was the fuel pump."

Pop pulled at his right ear. "Looks like you went right down the list," he said. "Did you look at the exhaust pipe?"

"Certainly," said Larry. "At least he was supposed to."

"Everything's okay," said Tommy. "Exhaust pipe, muffler, tail pipe."

"Engine don't overheat?" asked Pop.

"It ran as cool as a cucumber when I tested it."

"Hmm," said Pop. "That's not as cool as a Tom Collins, but it's cool enough, I guess. What about the valves?"

"I checked the timing with the shop manual. It's right on the nose."

"So you see," broke in Larry, "he musta done somethin' wrong. When I told him what to check, I didn't miss nothin'."

Pop tugged at his ear again and looked at Larry with one eye closed. "You didn't mention the spark plugs," he said.

"But I checked them anyhow," said Tommy. "I cleaned them and checked the gap. They're perfect."



"Most people believe what they read or hear," said Pop. "They're too lazy to find out the truth for themselves."

Pop opened the front door of the sedan. "Let's take a ride in it," he said.

"I already road-tested it," said Larry. "I certainly ought to know a miss when I hear one."

"It's a nice afternoon," said Pop. "I feel like a ride." He turned to Tommy. "Climb in," he said.

Pop headed the car for the town limits and soon had it rolling along a flat slab of state concrete. As the speedometer needle touched 46, the engine began to spit and miss. "A miss at 46," said Pop. "That makes her an old maid, don't it?" He slowed down. Then after a few seconds he tramped on the accelerator again and the engine sounded as if someone had tied firecrackers to the exhaust pipe.

(Continued on page 58)

1946 Cadillac Steering Diagnosis

TROUBLE-SHOOTING or diagnosing conditions in the steering system of a car is a job that requires a lot of thought and careful checking.

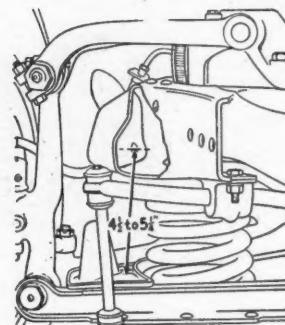
A great variety of complaints are made by owners, but most of these can be tied down to a few classifications. These classifications are, hard steering, shimmy, wheel tramp and wander.

When servicing the front suspension system of the 1946 Cadillac, it must be borne in mind that any bent parts that are straightened, must be straightened cold, and only if the part is not bent more than 5 deg. Straightening a part more than this amount may set up strains, or cause minute cracks which are not visible to the eye and render the part unsafe for service. Never use heat when straightening parts as the effect of previous heat treatment will be destroyed, and will leave the part either soft or brittle. In either case the part is unfit for reuse and replacement is the only alternative.

When the complaint is hard steering, first check the tires for low or uneven pressure. Most car owners hesitate to say whether the car has been worked on in some other shop, so the next point to check is the steering gear and connections for being adjusted too tight. If this condition is found it will be necessary to readjust the unit. Excessive caster is another cause of hard steering, and the angle should be checked, and correction made as shown in the illustration. The correct angle is $1\frac{3}{4}$ deg. negative to $2\frac{3}{4}$ deg. negative.

Insufficient or incorrect lubricant in the steering gear will also cause hard steering. Bent or twisted suspension arms may be another cause of hard steering. Either straighten or replace the parts. Sagged front springs can also cause hard steering. This can be checked by measuring the spring height from the top of the plate holding the lower rubber bumper to the lower rivet holding the upper rubber bumper on the frame. This dimension should be $4\frac{1}{2}$ to $5\frac{1}{4}$ in. A bent steering knuckle binding the king pin, or a badly

Follow this simple step by step service procedure when checking over the wheel alignment on the 1946 Cadillac models



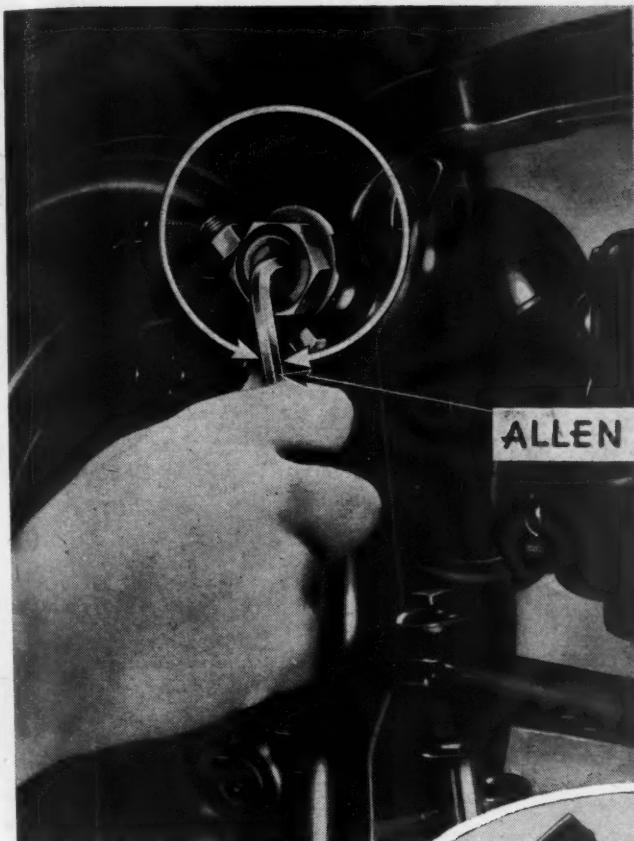
**BY
BOB TURNER**

To check for sagged springs measure between the points shown in the illustration at left. If height is less than amount shown, replace the springs.

scored or worn king pin thrust bearing which causes the same condition, will also cause hard steering. In either of these cases, the part should be replaced.

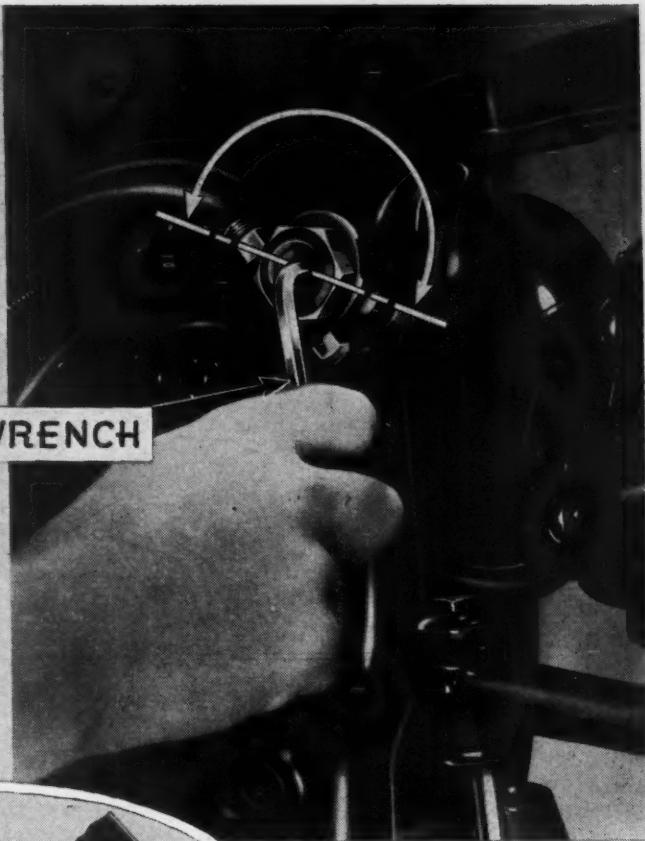
When checking for front wheel shimmy, first inflate all tires to the correct pressure. Test the shock absorbers for correct operation and replace any that are inoperative. Steering connections or king pin bearings badly worn will also cause shimmy and where this wear occurs the parts should be replaced. Probably the most common cause of wheel shimmy is out of balance wheels. Wheels, tires and brake drums should be balanced as an assembly both statically and dynamically to overcome this condition. A tire which has a large bulge, or a blowout patch in it will also cause this trouble. This is essentially an out-of-balance wheel, and the tire at fault should be replaced.

Wheel tramp is closely related to shimmy, and it is often difficult to distinguish between the two. Wheel tramp may occur in either the front or rear wheels, and both conditions will affect steering. Wheel tramp generally shows up as a violent shaking of the car

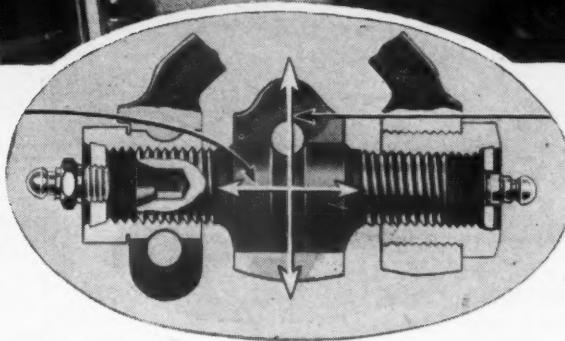


Caster Adjustment

Remove the grease fitting in the front end of the eccentric pin, and use Allen wrench to make camber and caster adjustment.



Camber Adjustment



which makes steering very difficult. The most common cause of this trouble is wheel and tire assemblies out of balance. It is possible that this unbalance is due to a blowout patch in the tire, a large bulge on the tire or an imperfect recap. When these conditions are found the tire should be replaced. All wheel and tire assemblies together with the brake drum, should be balanced both statically and dynamically.

Shock absorbers are another source of trouble to which wheel tramp may be traced. If these units are not operating properly a slight unbalance condition in the wheels may cause wheel tramp. Check the shock absorbers for leaks, and if none are apparent, refill the units with fluid made for this purpose. If leaks are apparent, replace the units. A weak front spring may also contribute to wheel tramp when spring action is not properly controlled by the shock absorbers. This condition can generally be determined by measuring the spring height. This dimension is given in a previous paragraph and is also shown in the illustrations. If the springs do not conform to the dimension

shown, replace the spring to avoid difficulty.

Car wander is a very common complaint, and there are numerous troubles which may cause it. Check the tires and make sure all have the proper pressure. The steering connections may be adjusted either too tight or too loose. Either of these conditions will cause wander. Examine the connections thoroughly, and if any of the parts are worn replace them. Worn king pin bushings is another cause of this condition. Replace the king pins and bushings.

Wheels toeing-out in the straight-ahead position will cause the car to wander. Toe-in should be set to $1/32$ in. Check the caster angle as insufficient or uneven caster will cause the car to wander. A bent steering knuckle will also cause this condition. The knuckle should be replaced and the caster, camber and toe-in properly set. The camber angle is minus $3/8$ to plus $3/8$ deg. Another fairly common cause of wander is a shifted rear axle due to loose spring clips or a sheared spring center bolt. In this case either tighten the spring clips or replace the center bolt.



The Low-down on Lighting-up

IN the past, too many shops and salesrooms have been laid out without sufficient attention being paid to the size and number of lights. As a result, some shops had too much light, while others had too little and a great many establishments seem to have followed a leopard-like system by providing light and dark spots.

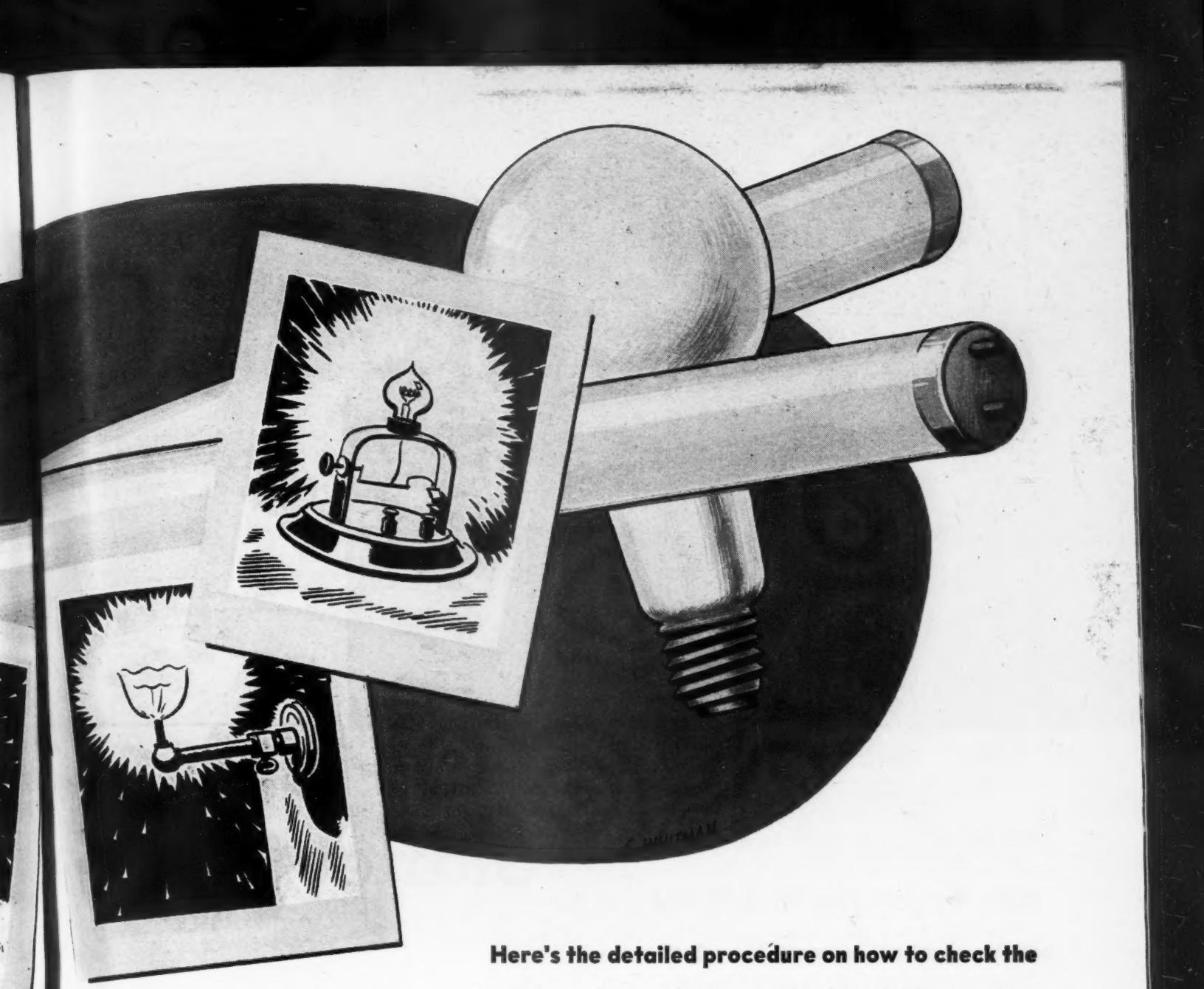
It's a cinch to see why such conditions exist as on the surface, the subject of light would seem to be simple, but after only a little study many men are left floundering in the dark. It is quite a complicated subject generally far removed from most automotive men's normal experience. Fortunately it can be boiled down to a few simple rules.

For the sake of discussion let's imagine a room, or

By S. R. B. TAYLOR

rather a closet ten feet on a side. On the hundred square feet of floor area thus achieved is wanted a light intensity of 30 foot candles. This number of foot candles is recommended practice for automobile repair shops. Hang a 500 watt bulb in a normal direct light fixture ten feet above the center of the room. This will give about 26 foot candles of light intensity on the floor, and that is near enough to 30 foot candles to be called ideal.

Now that this closet is ideally lit; build another. With enough care and luck with the lumber yard there



Here's the detailed procedure on how to check the right number of lights required to light your shop

Your Shop

will soon exist a group of ten foot on a side square closets arranged to equal the floor plan of your shop. Each of these closets is an ideally lit shop in miniature. Knock down the walls between them and, lo, a shop equivalent to yours and ideally lit.

Economics here poisons our Eden, 500 watt bulbs are expensive to operate, but if a capital investment is made in fluorescent lighting fixtures, the cost of operation can be cut in half. Fluorescent tubes

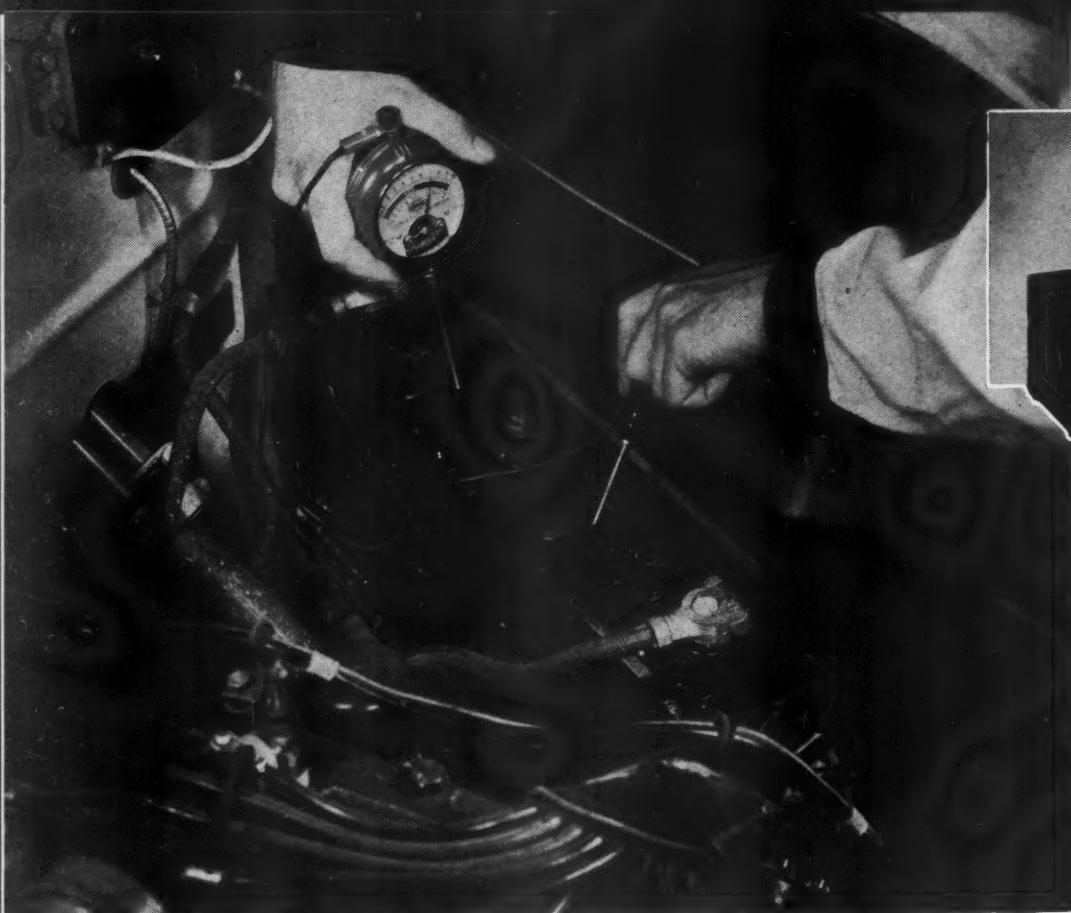
(Continued on page 64)

LIGHTING TABLE

This table gives the number of Watts necessary to give 30 foot-candles of light intensity on a given area from a given height. To determine the number of fixtures needed to properly light your shop, divide the total area of your shop by the given area for the mounting height selected. The Watts stated in the table are the number needed in each fixture. The values here given are averaged values. A great many variables have been averaged out. [The lighting companies have a series of tables which permit a closer calculation of the Watts needed. These tables take into account, the color and condition of the paint, the general shape of the shop, the style of the fixture, and the method of mounting.]

Fixture Height In Feet	Maximum Spacing Allowed Between Fixtures in Feet	Number of Square Feet That Will Be Lighted Per Fixture	Average Watts Needed for Each Fixture Using	
			Fixture determines	Filament Fluorescent Bulbs Tubes
8	7.5	56	200	80
9	9.0	81	300	140
10	10.5	110	450	200
12	13.5	182	750	340
14	16.5	272	1200	520
18	22.0	484	2325	960

Filament Bulb Sizes: 150, 200, 300, 500, 750, 1000, 1500 Watts. Fluorescent Tube Sizes: 15, 20, 30, 40, 100. Divide the given watts by the wattage of suitable bulbs or tubes to get the number needed.



The 3 photos above illustrate testing voltage drop in cranking motor leads with low reading voltmeter.

Making cell voltage check of battery with low reading voltmeter.

Maintenance checks and corrective steps are two important factors in the job of keeping the starting motor in operating condition

Starter Motor

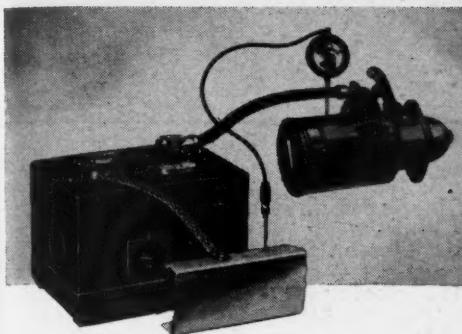
THERE are two parts to the job of keeping the cranking motor operating: maintenance checks to locate trouble and correct it before it becomes serious, and trouble-shooting to find the source of trouble after it has become noticeable. Let's take the second part first.

When the cranking motor cranks the engine slowly or not at all, you can make a quick check to find out whether the trouble is in the cranking motor or elsewhere. First, turn on the headlights. If they burn dimly, the battery is probably run down. If they burn with normal brilliance, the battery is probably in a fairly well-charged condition. Operate the cranking motor. When the cranking motor switch is closed, any of three things will happen—the lights will go out, the lights will dim considerably, or the lights will stay bright with no cranking action taking place.

If the lights go out, it indicates that there is a poor connection in the circuit between the battery and

cranking motor. This poor connection allows enough current to get through to light the lights, but when the circuit to the cranking motor is closed, most of the current that does get through enters the cranking motor so that the lights go out. Usually, the poor connection will be found at the battery and the correction is, of course, to remove the battery cables, clean the cable clamps and terminals and replace the cables tightly. A coating of petroleum jelly on the clamps and terminals helps to retard corrosion.

If the lights dim considerably but do not go out, it usually indicates that the battery is pretty well discharged. The battery should be checked with a hydrometer, however, before anything further is done (Fig. 1). If the battery's specific gravity is found to be reasonably high and uniform from cell to cell, then the battery is probably not at fault, and you should look elsewhere for the trouble. It is possible that some mechanical condition in the cranking motor or engine is making it difficult for the cranking motor to turn the engine over with the result that there is an excessively high current drain on the battery. This causes the lights to dim considerably when the cranking motor is operated. In the engine, tight pistons or



By WILLIAM H. CROUSE



Using hydrometer to check state of charge of the battery.

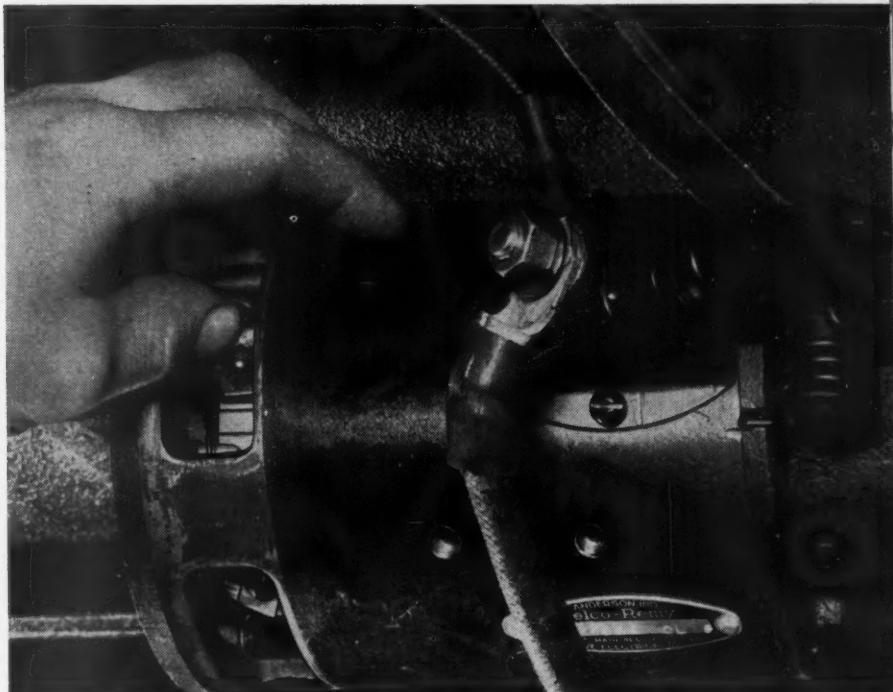
Maintenance

bearings, or heavy oil might put an excessive load on the cranking motor. In the cranking motor itself, a bent armature shaft, loose pole shoes or worn bearings, any of which will allow the armature to drag, will reduce cranking performance and increase the current draw.

The third condition which will be found is that the lights will stay bright with no cranking action at all. This indicates that there is an open circuit either in the cranking motor, in the cranking motor switch, or in the switch control circuit. Where the application is solenoid operated, the solenoid control circuit can be eliminated temporarily by placing a heavy jumper lead across the solenoid terminals to see if the cranking

(Continued on page 70)

Checking cranking motor brushes and commutator.



SELLING POWER

This is the first in a series of articles on selling written for the dealer and independent

By E. WESLEY HEVNER

"I'm Harold!"

THE voice came from the doorway. In it stood a negro, black as his ancestral Africa. "I'm Harold," he repeated, and there flashed into view a row of gleaming ivories. You never saw a wider grin or a friendlier face.

We had heard about Harold in advance of his coming. Long deprived of a regular shoeshine man, the shoes at our office were in various stages of lustre and lacklustre. When word got about that Harold was coming, we knew the war was over and that the old days were coming back. Here, in the person of Harold, the new shoeshine man, was confirmation. We might go without butter for a while, eat sparingly of meat, and forego bread, but at least we had a Company shoeshine man again. Our spirits soared.

For one of the indisputable privileges of American business men is having their shoes shined at their desks. For years, the office buildings of America have been patrolled by both white and colored gentlemen who minister to the nether extremities of business men.

These worthy shoeshine merchants have paid their way in more respects than one. They usually bring a note of interest and cheer. Natural psychologists, they can be quiet or talkative, as befits the customer's mood. They have heard a surprising amount of business discussed and they ponder over the intricacies of the corporate worlds through which they travel daily.

They dispense wit and philosophy along with shines. To borrow Coca Cola's slogan, they are "the pause that refreshes."

To our office, for some years,

came Lee, a little negro whose liking for "white whiskey" and prize fights vied with his desire to have a shoeshine stand. When he finally got his stand, he abandoned us with great reluctance, but abandon us he did.

Came the war, and shoeshine men helped to build ships and guns. We shined our own, or they went unshined.

Last week came Harold. He made arrangements to
(Continued on page 76)

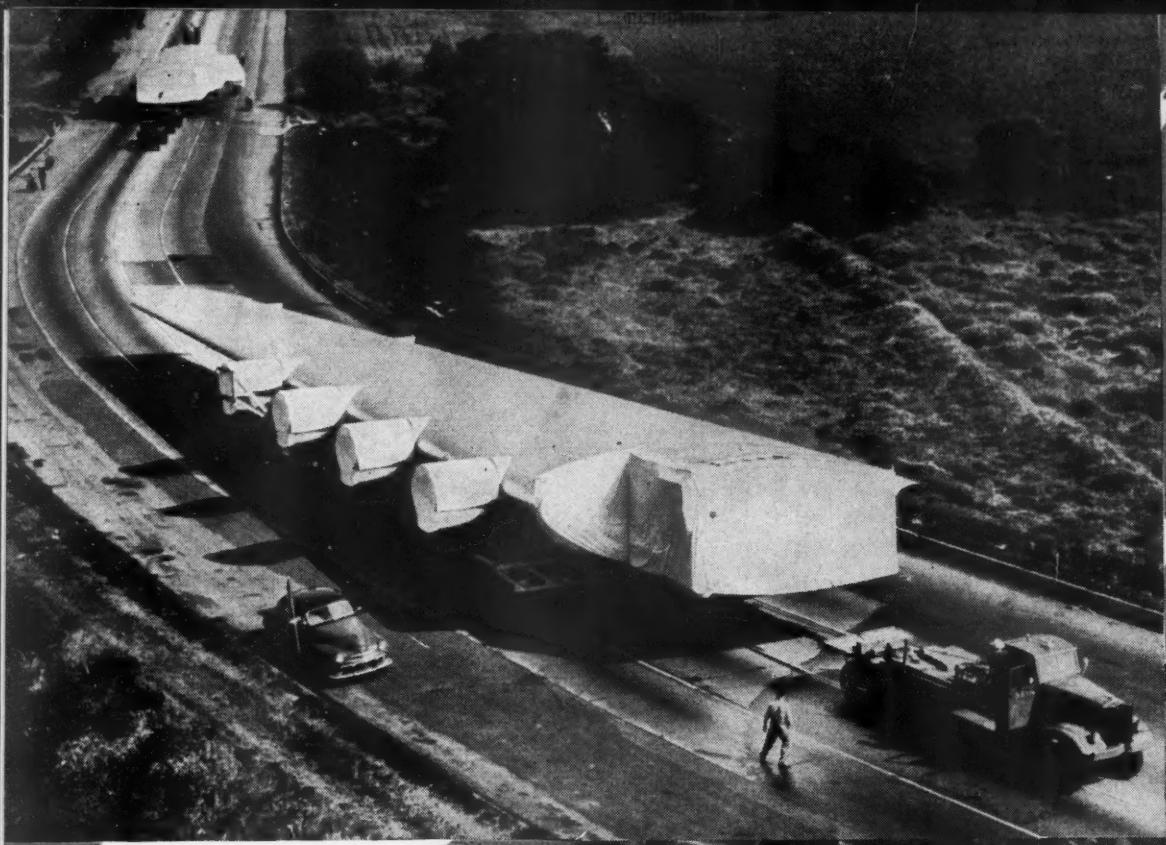


"Quick, Jim, turn on the radio and see if the war's over—all the jobbers' salesmen are being courteous this morning!"



Thousands of motorists will be visiting vacation sites on the Fourth of July week-end. Out in Santa Monica, California, actresses Suzy Crandall, Angela Greene, and Joan Winfield have already selected their vacationing spot, and are enjoying a wiener roast in anticipation of the holiday.

**MOTOR AGE
PICTURE
GALLERY**



The huge, eight-engined "HK-1", built by Howard Hughes Aircraft Co. is nearing final assembly. Shown in the photo are two wing sections of the mammoth amphibious craft being transported to a graving dock in Long Beach, California.



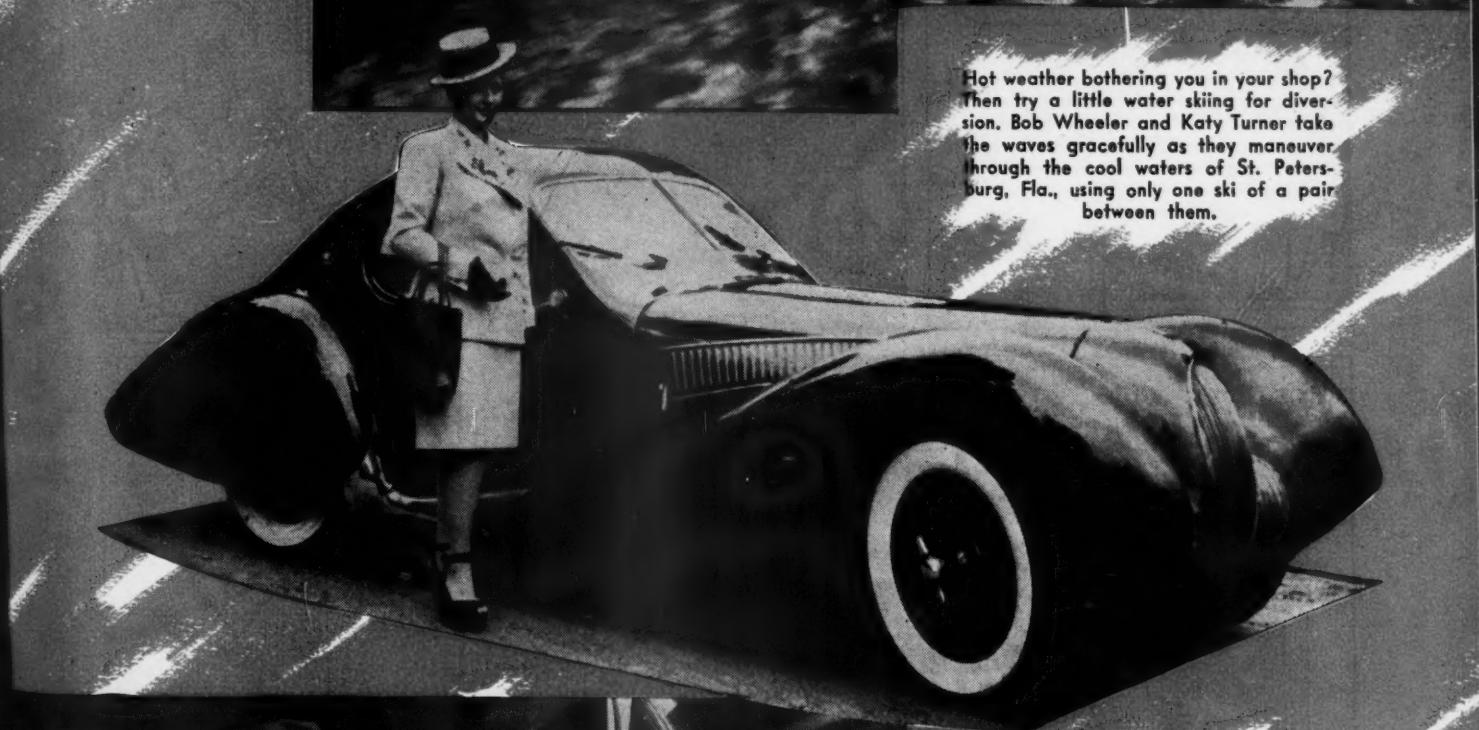
Now comes a school for dogs where the canine pets can acquire higher learning in better curbside manners. Hydrants and posts are frowned on in the curriculum. Here trainer John M. Behan takes a wire-haired terrier through first phases of the training course.



The much-discussed Pan-American highway is nearing completion after 20 years of planning and actual construction. Shown here are native Indian workers near Las Casas, Mexico, working on the highway link in that area. The 11,200 mile-highway is expected to be opened to traffic within two and a half years.



Hot weather bothering you in your shop? Then try a little water skiing for diversion. Bob Wheeler and Katy Turner take the waves gracefully as they maneuver through the cool waters of St. Petersburg, Fla., using only one ski of a pair between them.



A combined fashion and auto show was presented at Brussels, Belgium, recently. Shown is an Alfa Romeo, body by Roggemans, and presented by Melle Deleol who models something new in sports attire. Lines of both car and model were given studious attention by spectators.



Robert E. Hannon, a reporter with the St. Louis Post Dispatch phones in his story to rewrite from his car through the medium of two-way radio telephone. This was the first of a series of public tests, demonstrating the use of the instrument.

FRANK THE FIXER

STORY BY J.E. FORD
DRAWN BY A.L. CASSEL

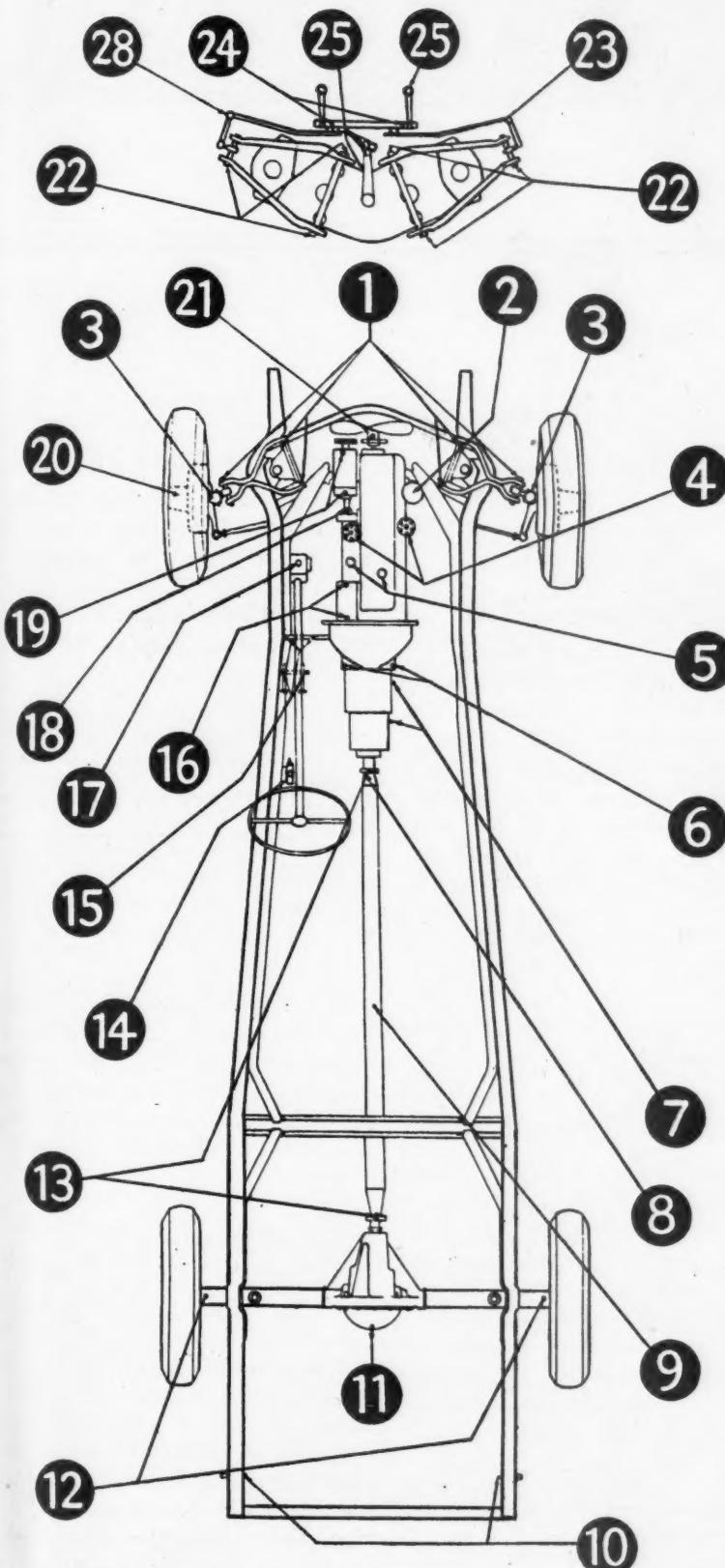
IT WON'T WORK.
WHITEY'LL KNOW
IT'S SOME MOVIE
ACTOR

JUST THE SAME
IT'S STAYING
THERE TILL
WHITEY GETS GOOD
AND JEALOUS

WHAT'S THIS?
OH, JUST A FRIEND
OF MINE
LOOKS LIKE HE
OUGHT TO BE IN
A FLOWER SHOW
... AND I DON'T
MEAN WITH THE
NASTURTIUMS



1946 NASH Lubrication



For informative, detailed procedure on lubricating the 1946 Nash models, follow this lube diagram

1. 1000 miles—Upper Control Arms 4660-4640 Chassis Lubricant
2. 8000 miles—Renew Oil Filter
3. 1000 miles—King Pins 4660-4640 Chassis Lubricant
4. 1000 miles—Distributor 4660—Engine Oil—4640—Grease
5. 2000 miles—Engine Oil—Above 32 deg. F—SAE-20
Below plus 10 and above minus 10 degrees F—SAE 10-W
6. 1000 miles—Clutch Throw-out Shaft Chassis Lubricant
7. 2000 miles—Transmission and Overdrive {Summer SAE 90
Winter SAE 80
Drain and refill every 10,000 miles}
8. 3000 miles—Propeller Shaft Joint 4660-4640 Chassis Lubricant
9. 5000 miles—Propeller Shaft Bearing 4640 Engine Oil
10. 1000 miles—Spring Shackles 4660 Chassis Lubricant
11. 2000 miles—Rear Axle Hypoid Lubricant SAE 90
12. 15,000 miles—Axle Shaft Bearing Wheel Bearing Lubricant
13. 15,000—Universal Joints 4660 Chassis Lubricant
14. 1000 miles—Brake Master Cylinder Hydraulic Brake Fluid
15. 1000 miles—Brake and Clutch Pedals Chassis Lubricant
16. 5000 miles—Starting Motor Engine Oil
17. 3000 miles—Steering Gear SAE 140
18. 3000 miles—Water Pump Water Pump Grease
19. 5000 miles—Generator.... Engine Oil
20. 10,000 miles—Front Wheel Bearings Wheel Bearing Lubricant
21. 1000 miles—Fan Bearing .. Engine Oil
22. 1000 miles—Lower Control Arms Chassis Lubricant
23. 1000 miles—Steering Knuckle Arms Chassis Lubricant
24. 1000 miles—Drag Link.... Chassis Lubricant
25. 1000 miles—Steering Idler Arm Chassis Lubricant

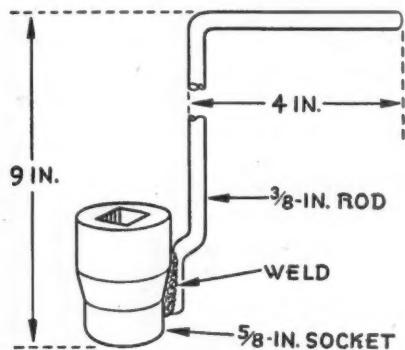
Here's your chance to pick up a little extra money. We'll pay five bucks (\$5.00) for every Shop Kink accepted and printed. So send 'em in to us—some short cut you use in doing a job easier and faster than the other fellow—some special tool you made when you couldn't buy one to do the job—and we'll do the rest. Incidentally we won't accept any that have previously appeared in any other automotive publication. Send 'em in!

SHOP

Tool Aids Bolt Adjustment

When adjusting the pitman shaft housing bolt, part number 259255 on 1939 to 1946 Chevrolets, we find it is very difficult to do without a special tool.

To make the job easy, we have made a tool for this purpose by welding a rod, made to the shape shown in the illustration, to a $\frac{5}{8}$ inch socket.—Porter Bakken, c/o Hermes, Rosinot Chevrolet Co., 2nd & Cedar, Spokane, Wash.



Metal Cutting Tool

We have made a very effective tool for cutting out body panels or tops. The tool is made from an old spring leaf, ground as shown in the illustration, to a square end with a notch and then sharpened.—Clarence R. Jensen, Blair, Nebr.

Water Distributing Tube

In my shop we use a method to replace the water distributing tube in 1935 to 1939 Packards which saves us about two hours' labor.

We remove the water pump and the radiator core. Then cut the brace from fender in half, and pry the shutters open far enough to slide out the old tube and install the new one. The brace is then welded back in place, and the core and water pump replaced. This eliminates removing the front end assembly.—Fred S. Deane, 1414 King St., Alexandria, Va.

Loose Battery Terminals

We use an easy method to find a loose battery terminal which has proved very satisfactory.

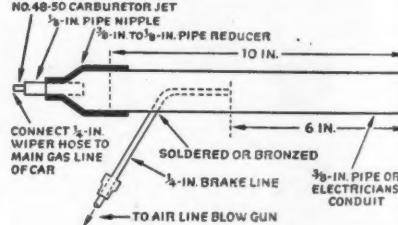
We pour a little water on each battery terminal, and then crank the engine with the starting motor. The terminal that is loose will immediately smoke.—F. C. Hope, Hope Service Station, Post Road & Brookfield St., White Plains, N. Y.



Gas Spray Gun

When doing a tune-up job on a car we always wash down the carburetor, distributor and cylinder head.

To do this job quickly, we have made the spray gun, shown in the



illustration, which takes the gas from the tank on the car. The gun does a very effective job, and makes these units much easier and cleaner to work on.—Joseph Sallay, 3031 E. 128th St., Cleveland 20, Ohio.

Stops Corrosion

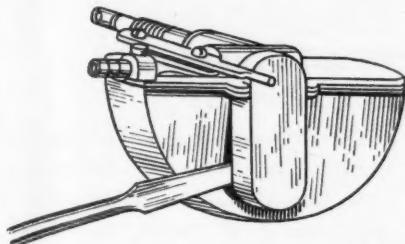
On cars where you have a lot of corrosion on the battery post, you can stop it by cutting out two felt washers that will just fit around the post. I generally make these out of an old felt hat. Place them around the post, under the terminal, and soak them with oil, and put your terminal back on. You will have a nice clean battery.—George H. Jacobs, 326 S. Maple St., Lancaster, Ohio.

KINKS

\$ 5

Windshield Wiper Repair

On a lot of cars, the windshield wipers do not work fast enough or maybe not at all. Of course, we know to check the hose first, and see that it is in good shape and not sucked together. Then if the wipers still do not work right, take a knife or a sharp screwdriver and pry open the little cover on the side of the wiper.



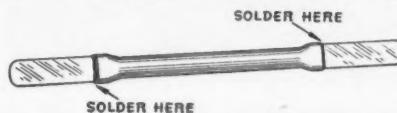
This applies mostly on later model cars which have the wiper under the dash. This little cover has a piece of felt under it to keep out the dust and it finally clogs up so the unit cannot breathe.—*Arthur Zeis, 808 Orchard St., Erlanger, Ky.*

Wrist Pin Alignment

When removing or installing the wrist pins in a Studebaker Champion, we use a tool which we made in the shop to turn the pins for alignment. The tool is made from a shouldered spring center bolt, two flat washers and a nut as shown at right.—*Donald H. Man, Box 382, Southbridge, Mass.*

Feeler Gage Sets

When adjusting valves on motors that are hard to get to, we made up several sets of feeler gages by taking a piece of copper tubing,

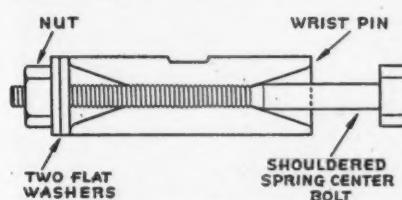


and sawing a slot in each end. Then insert the feeler blades of the correct thickness and flatten the ends of the tube. After the ends are flattened the blades are soldered in place.—*Charles E. Unruh, Sr., Wildwood Auto Repair, 215 E. Andrews Ave., Wildwood, N. J.*

Left-Hand Thread Bolts

We recently had difficulty in obtaining the left-hand thread wheel lug bolts for Chrysler cars.

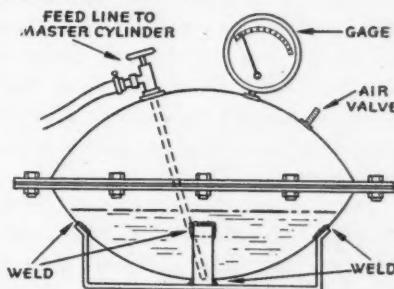
We ended up by making these bolts from old tie rod ends that have a 9/16 inch thread. We cut the threaded portion off the tie rod end, and turn down and thread one end to take 1/2 inch wheel nut. Screw the nut on the stud and spot weld the nut in place.—*L. H. Keller, c/o J. P. Dart Chevrolet, Greenville, Penna.*



Brake Bleeder

Shown in the sketch is a pressure hydraulic brake bleeder which we made and use in our shop.

The body of the bleeder is made of two Chevrolet truck differential covers bolted together. Legs made of strap iron are welded to one half, and ports for the air valve, pressure gage and the feed line to the master cylinder are welded to the other half.—*J. R. Hicks, c/o Al Dement Chevrolet Co., North Birmingham, Ala.*



Installs Grease Fittings

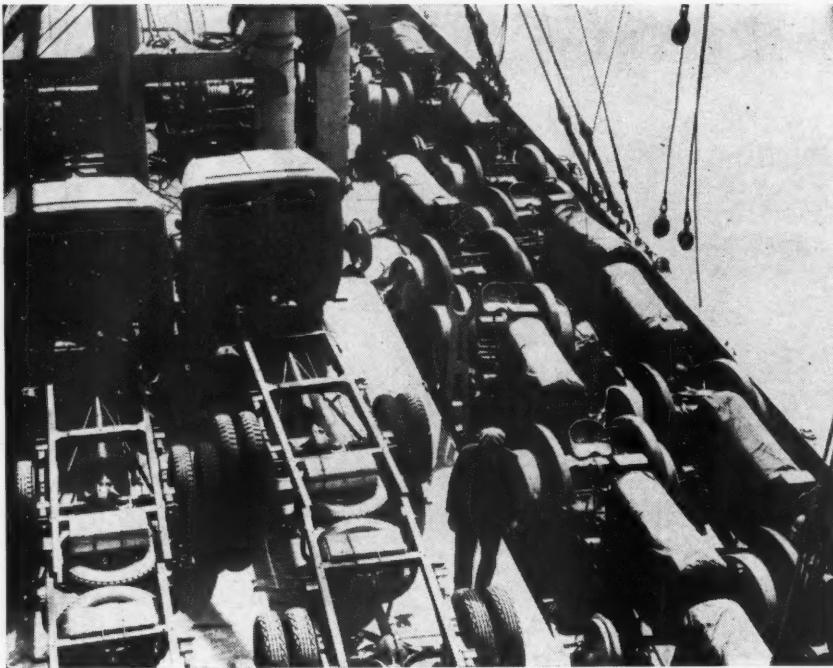
The earlier models of the Ford V-8 were not provided with grease fittings on the clutch throwout yoke shaft, and consequently have trouble freezing up.

To overcome this condition, we drill a 1/8 inch hole up from the bottom of the bell housing on each side so that the hole just starts into the yoke shaft. Follow the 1/8 inch holes with a 5/16 inch hole and drive in a grease fitting and the trouble is licked.—*F. A. Burridge, Bethel, Vermont.*

SALES

The MOTOR

MOTOR AGE For



The cargo of commercial trucks and tractors shown above aboard a freighter is part of the huge export drive now going on in England. Trucks and tractors shown here are destined for Finland.

Some Women Can Drive

Don't ever shake your head and cluck "women drivers!" when you're within earshot of Dolores Tew, 218 W. 73rd St., Los Angeles, a courier driver for Northrop Aircraft, Inc., at Hawthorne, California.

Dolores has a safety record which makes the average driver look pretty dangerous. She is one of the best drivers in the Northrop fleet, which recently won the Los Angeles Safety Council award for the safest operation among aircraft fleets. This week the speedometer on the little green 1942 Ford sedan which was assigned Dolores almost three years ago rolled over its first 100,000 miles.

That is a long way for a car to go. In Dolores' case it represents three sets of brakes, two clutches, quite a few sets of recaps and new tires. But it hasn't been hard on the fenders.

Although her courier driving

has kept Dolores within a 30-mile radius of the Northrop plant, and in the heavy traffic of Hollywood and downtown Los Angeles, she has never had a chargeable accident. The only "souvenir" she has picked up in her three years was a two-inch-long dent in a fender, when

(Continued on page 88)



Some Details on Willys Station Wagon Announced

James D. Mooney, president of Willys-Overland and chairman of the board, recently announced some details of the new all-steel station wagon scheduled for early production.

Describing the new model as a car able to work all week, and yet be suitable for pleasure on Sunday, Mooney said inquiries are heavy on the dual-purpose car and requests are being filed for its early delivery.

Constructed entirely of steel, rather than with side panels of less safe wood, the station wagon is larger than the civilian Jeep and will carry seven passengers.

It can be converted quickly from a passenger-carrier to a workaday vehicle ideal for delivery work and similar functions because of a clear, unhindered floor and wide doors.

Glidden Tour Is Being Revived

The famous tours, started in 1905 by the American Automobile Association to promote private motoring, good roads and better automobiles, is being revived Aug. 17 to 25 by the Veteran Motor Car Club of America. Members of the Antique Automobile Club of America, Philadelphia, and the Horseless Carriage Club of Los Angeles, have been invited to participate as guests.

A committee with members from Boston, New York, Philadelphia, and Flint, Mich., are handling the arrangements for the tour in which more than 100 antique automobiles—all in excellent condition—are expected to participate. James Melton, noted singer and owner of a large fleet of old cars, is chairman of the committee.

The cars, most of them built prior to 1913, the year in which the

(Continued on page 88)

JULY, 1946

a b c d

Ford Motor Co. to Construct Huge New Research and Engineering Center

Henry Ford II, president of the Ford Motor Co., announced plans for the construction of a new research and engineering center at Dearborn, Mich.

The center, a \$50,000,000 project, is named in honor of Henry Ford and Edsel B. Ford, grandfather and father of Henry Ford II.

The project will be situated on a 500-acre tract to the west of Dearborn Inn, adjoining Oakwood Boulevard and bordering both sides of Village Road. The center will comprise a primary group of eight buildings, designed to provide for great expansion of the company's research-development engineering facilities and also to bring into close geographical relationship all activities in these fields. These eight buildings will be grouped around an artificial lake 800 feet long, 300 feet wide.

It will adjoin many of the company's existing engineering facilities, including: the engineering laboratory, the body engineering building, the weather tunnel, and the Ford test track.

It is estimated the project will take eight years to complete. Ground will be broken for initial construction as soon as government regulations permit.

Modern architectural design commensurate with functional demands will be the governing motif. Construction will be steel and concrete with limestone exteriors. Units in the group will include:

Administration and Engineering Building; Styling Building; Dynamometer Building, Engineering Exhibit Building; Electrical and Chemical Laboratory; Laboratory for Human Engineering; at least two other major structures and a number of lesser buildings.

Because of the company's

stepped-up plans for new models, the first units to be built will be the Body Styling Dynamometer Buildings.

Extensive parking facilities convenient to all buildings in the center will be provided. All roads and parking areas will be paved, and snow and ice will be melted from them by underground steam pipes. Cover will be provided for persons walking from their cars to the various buildings. All parking lots will be suitably landscaped.

A central steam heating plant will heat all buildings.

Pedestrian tunnels, heated and lighted, will connect all buildings in the center. An electrical sub-station and grounds maintenance structure will be located in the center.

AAC Completes Meet At Hot Springs

The Automotive Advertisers Council have completed their second largest meeting in their history at Hot Springs, Va., held May 28. AAC worked hard on a wide variety of subjects at this meeting including an all-day Sunday session which lasted from noontime until midnight.

Outstanding subjects of discussion included the discussion on the Rural Market by Chas. LeFevre, advertising manager of the Sealed Power Corp., Muskegon, Mich. This involved the discussion and definition of this rapidly developing phase of the after-market.

With the coming A.S.I.S. show in Atlantic City in December, a detailed presentation by the AAC Show Committee, headed by George W. Stout, sales promotion manager of the Perfect Circle Co., occupied

(Continued on page 84)



General view of the new Ford Research and Engineering Center which will be constructed on a 500 acre tract at Dearborn, Mich. The project will cost a total of \$50,000,000 and will take 8 years to complete.



CLEARING HOUSE

FOR SERVICEMEN'S QUERIES

Bill Toboldt, Editor, Motor Age

Annoying Vibration

We have a 1941 Dodge, 2-door Deluxe Sedan which develops a vibration at exactly 27 miles per hour, when starting in second and high.

This model had a slight vibration between 12 and 15 miles per hour, but was not noticed by the usual customer.

This Dodge has about 90,000 miles, has had a complete motor job, clutch pilot bushing replaced, motor supports tight, and has had universal joint packed, inspected and seems to be in good shape.

The fluid drive unit has been checked, and has the correct amount of fluid. The unit has never been overhauled as it never leaked or caused trouble. This vibration did not develop until several thousand miles after this work had been done.

The vibration is very annoying, and I would appreciate any information on how to eliminate this trouble.—Donald H. Mann, Box 382, Southbridge, Mass.

I HAVE read with interest your recent letter describing the vibration trouble you are experiencing on a 1941 Dodge and after giving it considerable study, I am quite sure you will find the trouble to be caused by worn universal joints. If you will dismantle these joints, you will find that the balls have worn grooves inside the housing which results in the vibration you describe.

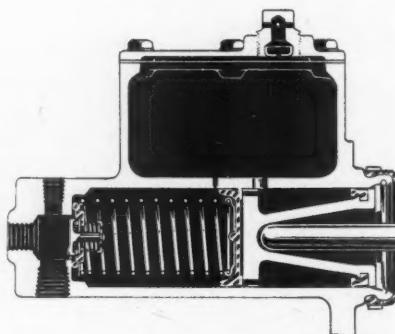
I would suggest you either install complete new joints, or rebuild these with new balls and new universal housing.

I am certain you will be able to overcome your trouble if you will follow these suggestions.

Brake Trouble

On a 1938 D-40 International equipped with a vacuum booster I rebuilt the master brake cylinder. When I put it back together, bled each line and adjusted each brake, I had half a pedal. Three days later the pedal had no lost motion. I backed off the plunger until proper clearance was obtained. Can you tell me why the pedal loses its slack and brakes get tight?—A New York Subscriber.

In regard to the trouble you are experiencing on your Model D-40 International—this will be found in the master cylinder, and is caused either by an incorrect adjustment of the pedal rod so that the master cylinder piston covers the by-pass port. Another cause of the trouble would be swollen cups which would have the same effect.



I would suggest you check the master cylinder making sure that the primary cup is in good condition and that the by-pass port is not clogged. Also make sure the length of the brake rod is adjusted to the correct length.

Regulating Spark Advance

I have several problems concerning motor cars in general that I wish you would answer for me.

Which adjustment should be made to regulate spark advance on Ford V-8 cars for higher octane fuel, the vacuum brake, or the set screw adjustment with graduation marks?

What is the purpose of the vacuum brake on V-8 distributors?

Where should a clutch pedal take hold after a new clutch is installed with the necessary 1 in. free pedal? That is, when clutch pedal is depressed and then let up, will it engage near floor boards or at top of travel?

If higher octane fuels have no benefit when used in a certain compression engine why have an adjustment on spark advance? Many cars have an octane selector to advance or retard spark 10 degrees.

Why doesn't the battery indicator used on Ford V-8 indicate generator voltage when engine runs?

In regard to question No. 4, it is said compression must be changed to get any benefit from higher octane fuel. Find that advancing the spark without a compression change increases performance?

If a car engine is built for 72 octane fuel with octane selector set at mid point, what octane fuel must be used to make use of 10 degree advance?

Does a voltage regulator keep the voltage at 7.5 volts regardless of generator output on battery state of charge?

When replacing connecting rod bearing caps, which side of engine does the heavy part of bearing face?

Would a change of spring tension on current regulator affect voltage

setting of 7.5 V?

How do you advise locating a short? Use a voltmeter or ammeter?

Would a voltmeter series with either ground strap or positive battery strap give same reading with a short present? Would ammeter in series with either of above cables give same reading?—Paul Hobush, Box 457 Point Loma, San Diego 6, Calif.

WHEN regulating or setting the spark on the Ford V-8, both the set screw and the vacuum brake should be adjusted. In general, the best procedure is to place the set screw in the fully advanced position, and then back out on the brake adjustment until the engine starts to ping. From this it can be seen that by increasing the tension of the brake the spark is retarded and reducing the tension will advance the spark.

In regard to the free travel of the clutch pedal, it is best that the clutch pedal does not contact the floor boards but have the necessary amount of free travel.

All cars are provided with an adjustable spark advance so that they can be adjusted to take full advantage of the particular type of fuel being used. The higher the octane rating of the fuel, the more spark advance can be used. Naturally, to get the maximum advantage out of high octane fuel, it is necessary to have a high compression ratio. However, even with an engine of average compression ratio, better advantage can be taken of a given fuel by adjusting the spark advance.

In regard to the battery gage on the Ford. This is actually a hot wire voltmeter, and it indicates the line voltage in the primary circuit. In operation, the bimetal in the gage is wound with a heater wire. The current approximately 1/10 ampere at 6/10 volts flowing through this winding heats the bimetal which in turn moves the gage pointer. The greater the voltage, the greater the heat generated and the more the pointer movement.

In your seventh question you say—"If a car engine is built for 72 octane fuel with octane selector set at mid point, what octane fuel must be used to make use of 10 degree advance?" The answer to this is that you can still make use of the 72 octane fuel by adjusting the spark advance to obtain maximum performance.

Provided the generator has sufficient capacity, a voltage regulator properly adjusted will maintain a constant voltage at the battery. In general, this voltage is 7.1 to 7.5 volts, depending on the adjustment of the regulator.

Changing the spring tension on a current regulator would have little or no effect on the voltage setting. To locate a short, it is generally considered better to use a voltmeter which should always be connected across the line and not in series. An ammeter placed in series with either the ground strap, or hot cable would give the same reading.

Peculiar Performance

We have a friend who owns a 1942 Clipper Packard automobile. When this car is driven 45 miles an hour, it uses one quart, SAE 30 oil in 200 miles. If car is driven around 60 miles regular, you can make 600 miles without any drop on gage.

Can you give an explanation for this particular performance?—G. Hoydee, Jr., P. O. Box 155, Franklin, La.

AM at a loss to give a satisfactory explanation for the unusual condition you are experiencing on your 1942 Packard. Quite definitely I do not think it is caused by any ring, piston or cylinder condition.

The unusual oil consumption might be the cause of leaks, or it might be caused by defective vacuum diaphragm in the fuel pump. I would suggest you check carefully for both of these conditions, and in addition I would strongly advise making a personal check of the car—driving it yourself, as it may be the customer has been in error in reporting the condition to you.

Engine Difficulty

A few days ago I installed new rings and ground the valves on a 1936 Plymouth, and since doing this work I have been unable to get it to hit right. As long as it is pulling or on the pick-up, it is O.K. but will miss at any cruising speed, especially between 10 and 20 miles per hour. I have installed new points, new carburetor, condenser, coil and wired the coil direct to the starter post, thus eliminating the ignition switch and all wiring, but no results. It will idle down to 4 m.p.h. and the compression is the

BUTCH . . .



same in each cylinder. The spark plugs check O.K. and are new. The valves worked free in the guides when installed.

Any help you may give will be greatly appreciated.—D. G. Jackson, Ft. Morgan, Col.

ON the trouble you are experiencing with a 1936 Plymouth the first thing I would check for would be sticking valves. I appreciate that you say the valves worked freely in the guides when they were installed; however, it is not unusual for valves to stick immediately after a carbon and valve job, particularly when the valve springs are on the weak side.

I would strongly recommend checking the valve springs for tension, and in addition, run some top cylinder oil or valve oil through the carburetor to be sure the valves are free.

It is also possible that new spark plugs installed during the war period were defective, and I think it would be advisable to try different sets of different manufacture in an endeavor to see if your trouble would not be overcome.

Clicking Noise

We have repaired a 1939 Oldsmobile 6-cylinder motor and since doing so, there is a bad click in it when accelerated up to a certain speed. Then it disappears, and you do not hear it idling. The click will not short out. We put in new rings, pins and ground the valves. We could not get bearings at the time.

Would appreciate any information you could give me on this.—William Lessard, International Falls, Minn.

AFTER carefully considering the clicking noise you are experiencing on a 1939 Oldsmobile, it would seem to me the most likely cause of your trouble is—the new rings are striking a ridge at the top of the cylinder bores. If you have removed this ridge, it is quite possible that the trouble is caused by tight wrist pins which in turn cause the old pistons to slap. In the latter case, this noise will soon disappear as the engine gets worn in.

In addition, I would suggest you carefully check each of the valve lifters to make sure they are not

scored in any way. Naturally if the cams have worn a groove or otherwise scored the valve lifters, a clicking noise will result which cannot be shorted out.

Water in the Fuel

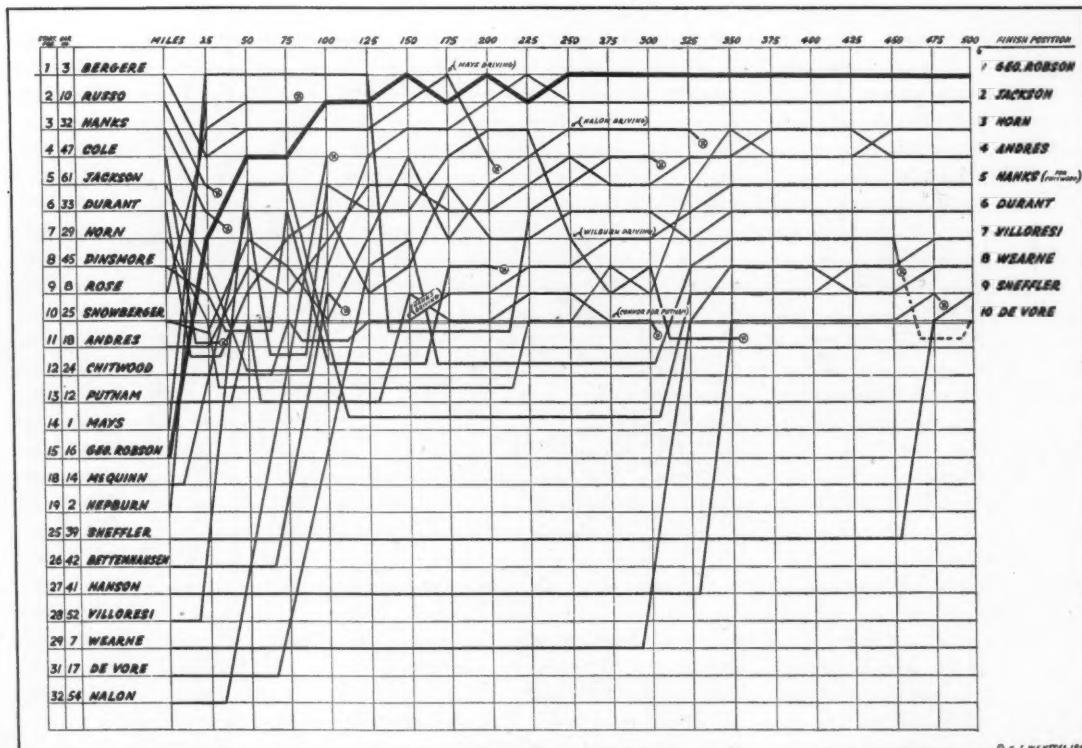
We have a 1935 Plymouth that collects water in the fuel pump bowl. We remove it once a week. We put on new tank, blew out lines, changed pump and carburetor. Also bought gas from several different places, still the same trouble. Any help will be appreciated.—R. O. Stars, 405 Lincoln St., Piqua, Ohio.

IN general, there are only two reasons why you should get water in the fuel of an automobile. It is pumped into the tank when you buy gasoline or, it is the result of condensation of moisture resulting from the humidity, and changes in atmospheric temperatures.

I would suggest that you drain about a gallon of gasoline from the gas tank of your 1935 Plymouth. There might be a large accumulation of water which, of course,

(Continued on page 93)

Indianapolis Race Position Chart



The above chart indicates the positions of racers at every 25 miles of the 500 mile race staged at Indianapolis on Memorial Day. Heavy line on chart indicates position of winner George Robson

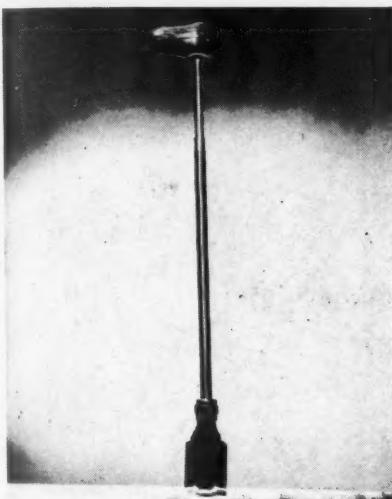
from starting position until the finish of the race. Note dual positions of Jackson and Robson from the 250 mile mark until the finish. Symbols indicate racers forced out.



NEW PRODUCTS

Adjustable Fender Guides

New adjustable fender guides have been added to the postwar safety auto-accessories line of the Casco Products Corp., Bridgeport, Conn. Installed on fenders, the adjustable guides enable the driver to check at a glance the clearance of his fenders in entering garages,



passing in traffic or close parking where, it is estimated, 50 per cent of fender damage occurs. The guide is adjustable to a vertical height of 12 to 19 in. and is easily attached to any car. A ball and socket joint assures perfect alignment. The top red guide is durable molded Lumarith and is mounted on finely finished, chrome-plated shaft. It is completely assembled.

Safety-Lock Tire Spreader

Hand-operated and portable, a new tire spreader to speed inspection of tires, is announced by the Eells Manufacturing Co., 22 Gilpin Road, Willow Grove, Pa. Called the "Eells Tire Spreader," the tool weighs only four lb. and features a safety lock which prevents the spreader from accidentally releasing once the handle is pressed down. Having two adjustments, one for 4.50 to 5.50 tires with seven in. opening, and one for 6.00 and up tires with ten in. opening.

New Parts Cleaner Is Introduced

"Almost all filter," is the way the Winona Tool Mfg. Co., Winona, Minn., describes their new "Wi-To-Co Parts Cleaner." Large savings in cleaning fluid are claimed and the secret of the new cleaner is said to be the efficient filtering of fluid by 24 pans in the cleaner. The travel of the fluid over the stack of pans is so slow that even transmission grease is declared to be filtered out. Made with an oversize motor and pump, and featuring a delivery hose which is semi-rigid and stays put to leave both hands free for washing small parts, the cleaner lists at \$137.50. Full details on delivery dates are available from the manufacturer.

Automobile Exhaust Stove Announced

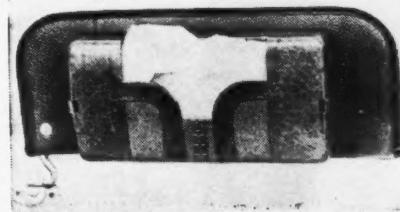
The heat of the automobile exhaust, is utilized for a new outdoor stove, announced by the Auto-Kook Co., 3295 Lothrop Avenue, Detroit, Mich. Suitable for picnics or roadside cooking, the stove fits on the rear bumper and plugs into the tailpipe for heat. Temperatures of 212 deg. F.—the boiling point of water—are said to be achieved and all types of food can be cooked using the various parts of the cooker which include a grate, hot plate,



and oven. Made of lightweight aluminum of about the same gage as kitchen ware, the Auto-Kook is especially desirable in forests, or other restricted areas where open flames are forbidden. Exhaust fumes are dissipated from the bottom of the unit, eliminating all danger of tainting food or inconveniencing the operator, the manufacturer states.

New Tissue Dispenser

Designed to slip easily onto any standard sun visor, a new handy tissue dispenser is announced by the Glenn C. Hall Co., 541 South Spring Street, Los Angeles 13, Cal. Called "Kar-X Automobile Tissue



Dispenser," it is made of attractive plastic. The base is tempered masonite, and it is fitted with two spring clips which slip over the top of the visor. Weighing only eight oz., and available in most colors, "Kar-X" retails at \$1.60.

Malabar Hydraulic Jack Announced

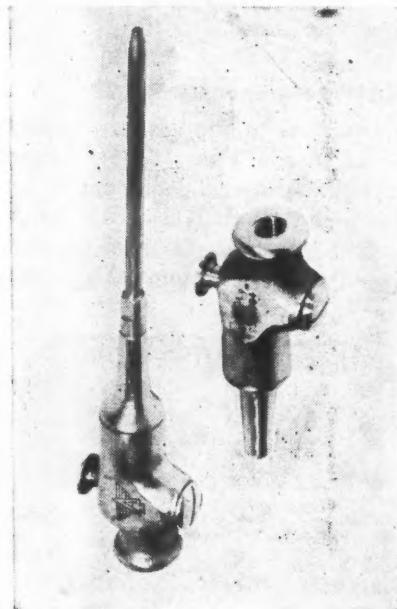
Added to the line of Malabar hydraulic jacks is a new "postwar design" bumper jack now in production by the Menasco Manufacturing Co., Burbank, Cal. Innovations include: top pumping unit eliminating stooping or squatting to operate, cleated swivel base to prevent slippage, a new type hook that fits all bumpers and is adjustable from a low of 4 1/4 in. to 20 5/8 in., hydraulic lift of 18 in. and feather-touch pump. Weighing only 11 lb., the new hydraulic bumper jack is fitted with a convenient carrying handle.



NEW PRODUCTS

New Air Gun Is Introduced

Chips, filings, oil, etc., flying up from machine or repair operations are declared to be no longer a hazard with the appearance of "Guardair," a new air gun manufactured by Algonquin Parts, Inc., 5000 Connecticut Avenue, South Norwalk, Conn. An "airguard," located above the nozzle of the air



gun, provides a safety umbrella of air at the touch of a feather-action thumb button. Chips, filings, etc., are arrested by the "invisible ring of air" and thrown downward. Said to be already a standard accessory on a number of nationally known machine tools, "Guardair" is available with both standard nozzle and extended tip for deep hole-drilling operations, etc. It comes in all standard as well as special thread sizes to fit any hose coupling.

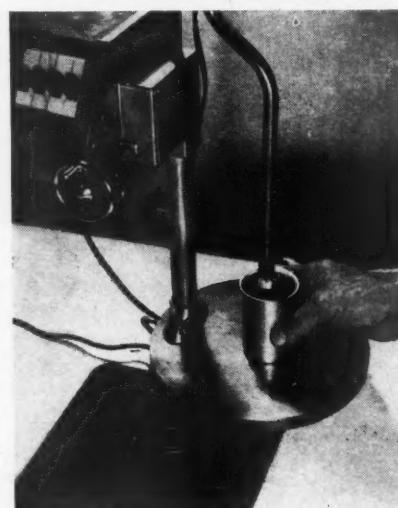
New Dealer Display Unit Announced

To simplify replacement of metal hydraulic brake lines, the Everhot Products Co., 2057 W. Carroll Ave., Chicago, Ill., announces a new dealer display unit containing six of the lengths of metal hydraulic brake

lines in greatest demand. All the trouble of cutting off tubing, attaching fittings, flaring, reaming, and deburring tubing is eliminated. The lengths of tubing in the Everhot display are of tin-coated, copper-lined, Bundyflex tubing, assembled complete with fittings. Each line is flared on both ends with the Everhot double-lap flare. Using a double, female, inverted flare coupling, and the six lengths of prepared lines in the assortment, a repair shop can assemble any required length of metal hydraulic brake line for all popular makes of cars and trucks. Everhot's No. 475 hydraulic-brake-line display unit contains four of each of the six popular lengths of brake lines.

"Midget" Paint Mixing Cup Is Announced

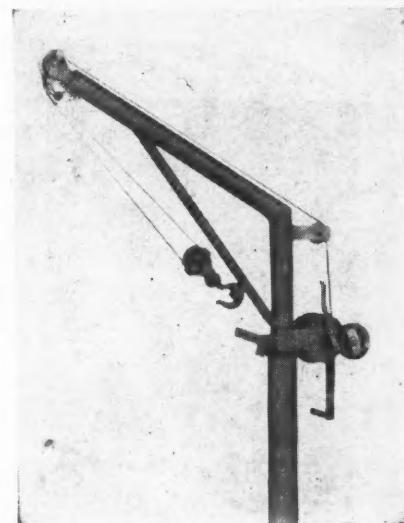
The right amount of paint for small touch-up jobs may be mixed in a new "midget" four-oz. mixing cup developed by the Sherwin-Williams Automotive Division, for use with the paint firm's color-mixing equipment used in refinishing shops. Considerable savings in paint are now possible since in the past it was necessary to mix $\frac{1}{2}$ pt. or more for the average spot-repair job. The rest was usually thrown away—the special color mixed being unsuitable for other jobs. The diameter and height of



the cup are designed so that it can be used with the Color Key when it is set at the $\frac{1}{2}$ pt. measure, the smallest of the five measuring scales on the Color Key. A turn of the wheel sets the scale to register any quantity of paint from one to 100 parts.

Paint is poured into the mixing cup until it touches the arm on the Color Key which causes the light in the tip of the arm to glow, showing that the desired amount has been poured. The key is reset for the second color and the operation is continued until the cup is filled to 100 parts. After stirring, the paint is ready for use.

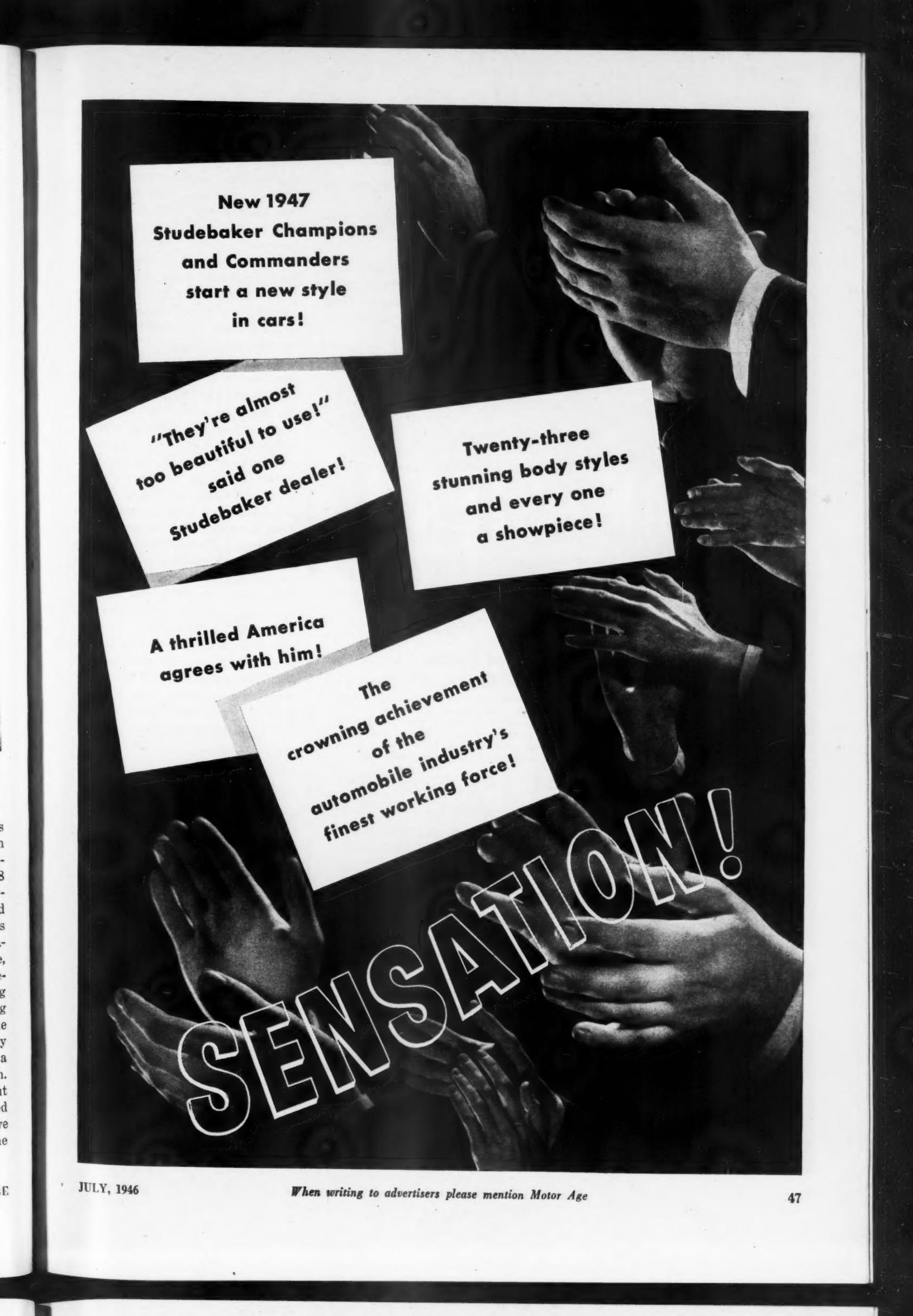
The midget cup is available through Sherwin-Williams jobbers



Blue Heron Truck Cranes Available

One man can easily handle loads up to one ton with Blue Heron Truck Cranes according to the distributors, Cam Tool Co., Inc., 288 21st Street, Oakland, Cal., thus saving loading and unloading time and improving safety. The cranes mount in a well or socket, permanently attached to the truck frame, but the crane itself can be removed in a few minutes leaving the truck bed clear. Swiveling easily through an entire circle, the cranes can be held at any point by a locking device. There is also a locking pawl on the hoist winch. Cables are plow steel, gears are cut steel and an air which is supplied at extra cost. All the cranes have a generous safety factor. Since the

(Continued on page 96)



New 1947
Studebaker Champions
and Commanders
start a new style
in cars!

"They're almost
too beautiful to use!"
said one
Studebaker dealer!

Twenty-three
stunning body styles
and every one
a showpiece!

A thrilled America
agrees with him!

The
crowning achievement
of the
automobile industry's
finest working force!

SENSATION!

When Will Low-Price Cars Come Back

(Continued from page 21)

about the lightweight cars being equipped with some of the newer developments, such as torsion bar springing and monococque body construction. The chief engineer of one of the big companies answers this by saying that cost will be deciding factor in determining whether such new developments are

used. In short, the car will be built to a price, and the best possible automobile that can be produced at the price at existing costs will be the end product.

The economics governing the manufacturers' decision to engineer and produce a new design to meet the demand for a car within the

reach of millions of American families have been thoroughly surveyed. Big companies do not plan the expenditure of millions of dollars for engineering development, new plants, equipment, and tooling on the mere hunch that the market may be there for the product. Exhaustive studies have convinced them that past, and pending price increases for automobiles have placed the former low-priced car beyond the reach of a large segment of the market. Statistics show that in 1941, about 37 per cent of all new cars purchased were bought by families with income of less than \$3,000, and that 65 per cent of the low-priced cars sold that year were purchased by this same group.

Before the war, there were about 11 million families in the \$1,500 to \$3,000 per year income classification, now there are about 13 million. However, Ford figures that in 1941, assuming the average income of this group to be \$2,250, the price of the Ford twodoor model represented approximately 38.5 per cent of income. In 1946, the price of the same model represents about 50 per cent of total income. In addition, with the sharp rise in income taxes and the greatly increased cost of necessities since 1941, the net income of this group now is lower than it was then. With current

(Continued on page 80)

Save COSTLY MAN HOURS! Speed REPAIR WORK!
Equip FOR SERVICE! Equip TO . . .

CLEAN with STEAM

SIEBRING
STEAM CLEANER

OPERATES Economically!
Burns low cost commercial fuel oil or gas! Electric units also available

Makes QUICK WORK of Tough Cleaning Jobs! Cuts Grease and Grime in a Hurry!

A big asset in any repair shop or service station! A time and money-saver. **ALSO A MONEY-MAKER!** The Siebring PORTABLE Steam Cleaner provides instant steam, hot water or a combination of the two **UNDER PRESSURE** for fast cleaning on the toughest grease and dirt packed jobs. First it knocks loose, then it dissolves and quickly removes hardest packed dirt, grease and grime. Penetrates crevices and corners. Does a BETTER job in HALF THE TIME!

LOW COST, PORTABLE UNIT for CLEANING

- and WASHING AUTOMOBILES
- AUTO MOTORS
- MOTOR PARTS
- TRUCKS
- TRACTORS
- and OTHER TOUGH JOBS!

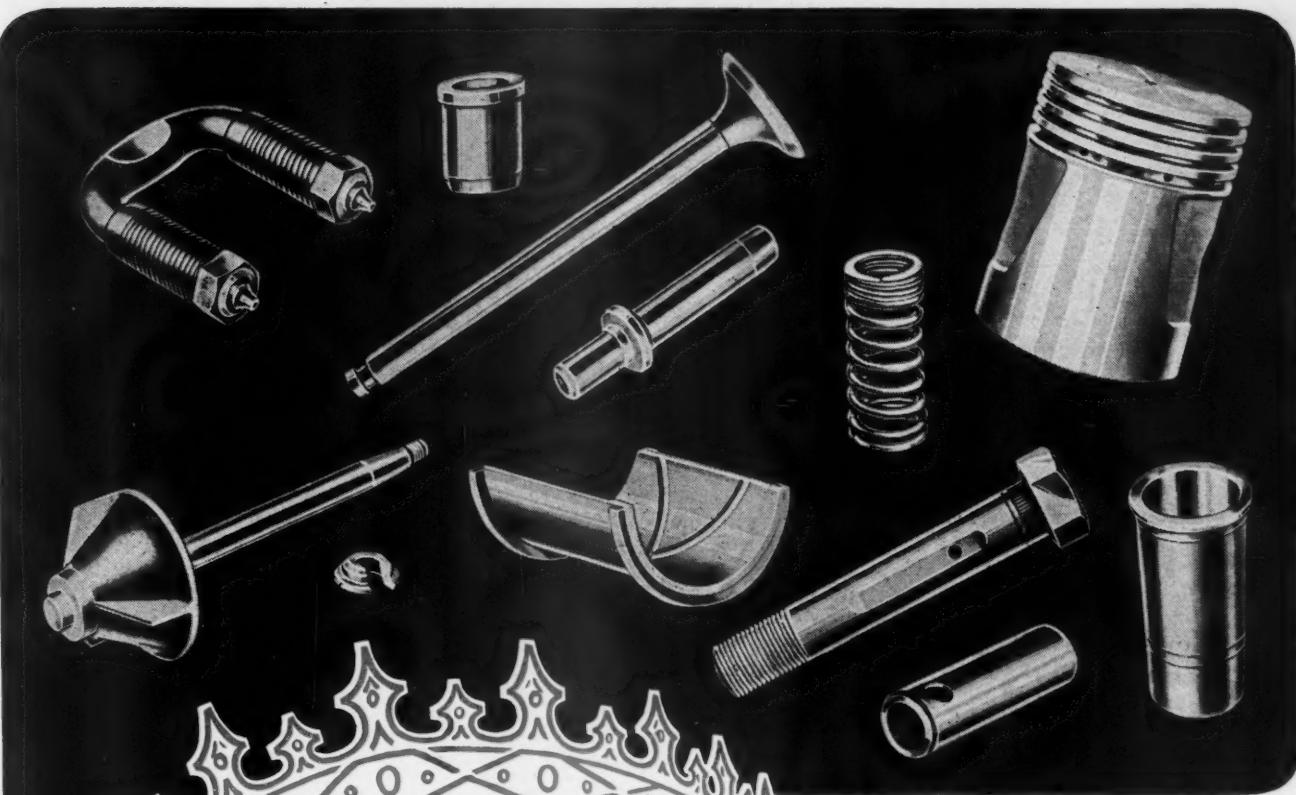
10-DAY Free TRIAL OFFER!

YOU RISK NOTHING! . . . Let us put this remarkable automatic steam cleaner in your shop for 10 DAYS' FREE TRIAL. See for yourself how simple it is to operate; how economical, safe and service free! Write for descriptive literature and details of our 10 Day "Free Trial" offer.

SIEBRING MANUFACTURING COMPANY
503 MAIN ST., GEORGE, IOWA



"I led the league in stolen bases last season!"



**THERE'S
MORE PROFIT
IN THE
KING LINE**

Because the complete King line makes it possible to buy parts that are made for each other; that work together; from one source, from one catalog at one high uniform profit. No more shopping or messing around. Pick a King jobber and stick to him. You'll quickly find there's more profit in the King Line.

KING QUALITY

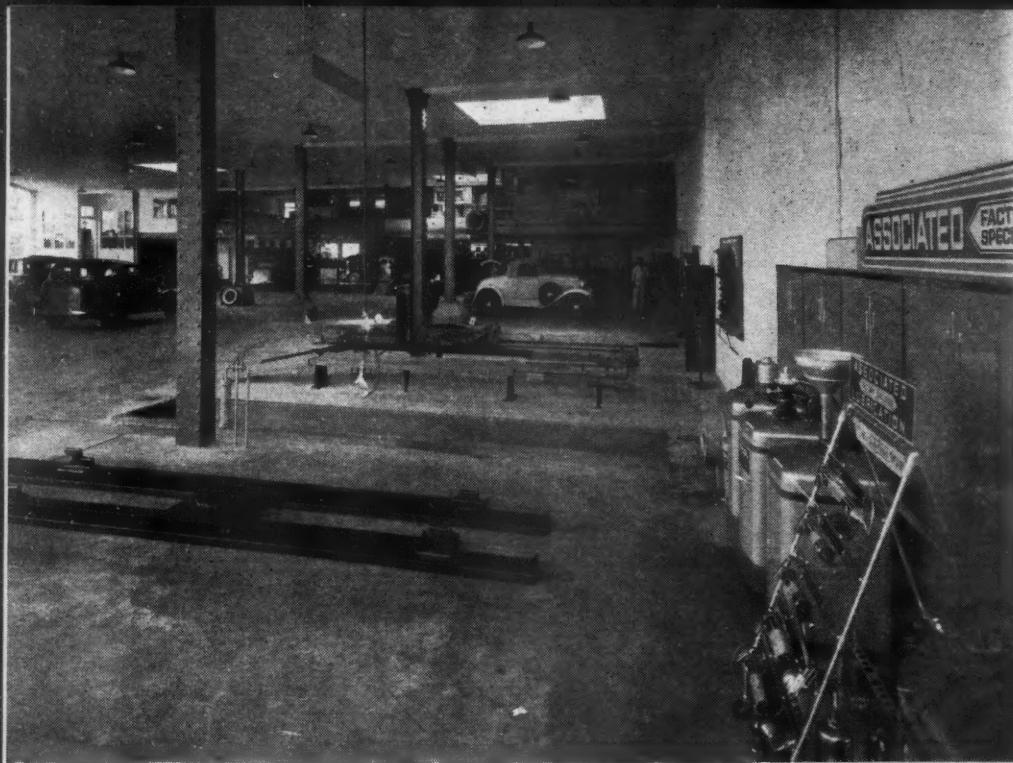
"Building for the future on a 26 year record"

ST. LOUIS 10, MO., U.S.A.

PISTON RINGS • PISTONS • PINS • VALVES
BOLTS • BUSHINGS • SILENT-U SHACKLES

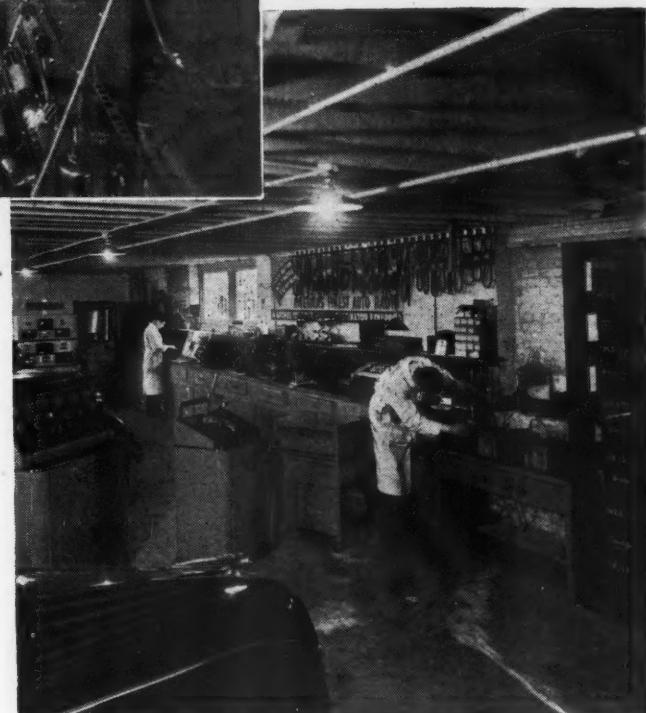
BEARINGS • WATER PUMP PARTS
SLEEVES • WHEEL SUSPENSION PARTS





Interior view of the Johnny Crowe shop at San Francisco, Calif. Note amount of floor area.

Below, battery and motor tune-up departments of the Crowe shop.



Bigger profits through super service are realized by this operator who maintains a high average of shop repair work

By C. DANIEL YOUNGS

Super Service Builds Profitable Volume

BECAUSE he insisted that each customer must get what he wants in the way of service and pays for, Johnny Crowe of the Crowe Co., San Francisco, Calif. has built a modern and efficient automotive repair shop that handles 100 jobs per day from a small blacksmith shop in 1912. The original force of three men has increased to where there are now 28 on the payroll. In 30 years, Johnny Crowe has made great strides.

A few years ago when his business had so greatly expanded that new quarters were imperative Crowe found a location on Van Ness Avenue in the heart of the San Francisco automotive district. Within the radius of a mile are located practically all of the new car dealers, many repair shops, automotive parts re-

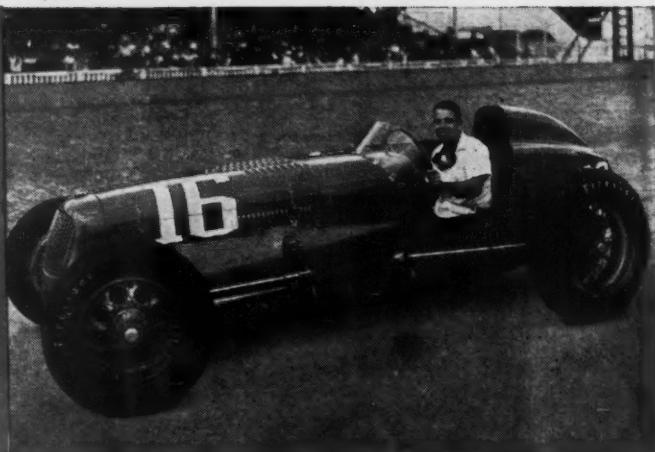
tailers, and wholesalers. The shop is well located.

His corner location gives him entries from two streets, and a large ground space in front affords easy access and quick assignment of cars to whatever division in which the work is to be done.

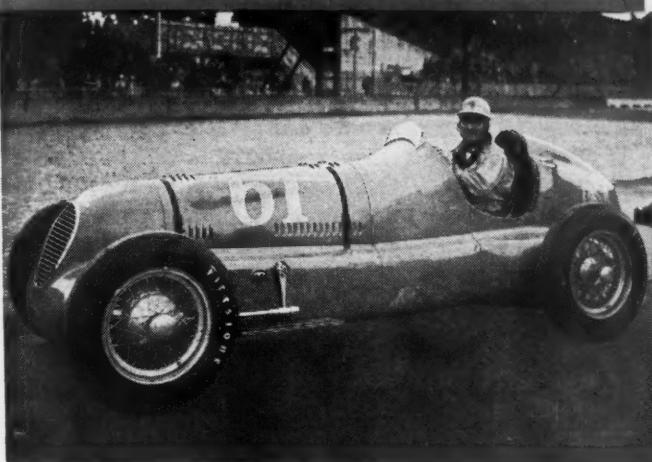
Each division, such as brake service, wheel alignment, battery work, tires, lubrication, motor tune-ups, etc., have openings to them from the front of the place, and this easy access to the proper division precludes any traffic jams or blocking up of the front while awaiting working space in the department to which it is routed. Compactness—availability—and plenty of room in which to work is the keynote of the entire layout.

(Continued on page 52)

WHIZ RODE WITH THE WINNERS AT INDIANAPOLIS



FIRST . . . GEORGE ROBSON



SECOND . . . JIMMY JACKSON



THIRD . . . TED HORN

First, George Robson 114.820 mph! Second, Jimmy Jackson 114.498 mph! Third, Ted Horn 109.820 mph! And WHIZ rode with all three! Engines assembled with WHIZ Gasket Makers . . . cooling systems protected with WHIZ Instant Sealer . . . brake systems filled with genuine WHIZ No. 3 Hydraulic Brake Fluid. That's the story of WHIZ and the 30th running of the Memorial Day Race at the Indianapolis Motor Speedway!

And here's more for the records: Every car in the race that was equipped with hydraulic brakes used genuine WHIZ No. 3 Hydraulic

Brake Fluid. Engines were assembled with WHIZ Gasket Makers. WHIZ Instant Sealer was used to guard against cooling system leaks. And WHIZ Venus Polish or London Coach Wax was used to groom most of the entries for the big show.

Find out how you can "Win with WHIZ," the fast-selling, profit-building line of automotive chemical products. Ask your jobber about WHIZ products right now! R. M. HOLLINGSHEAD CORPORATION, Camden, New Jersey; Toronto, Canada. Warehouses in Dallas, San Francisco, and Chicago.



Super Service Builds Profitable Volume

(Continued from page 50)

Johnny Crowe's business success did not come from any self-planned or self-conscious sociability. He is a natural "mixer" and makes friends easily. He is a member of several clubs and organizations.

A certain portion of his business increase may be attributed to friends he has made in these contacts. But combined with this ability to make friends, and what has been a more important factor in his business success is the fact that Johnny Crowe KNOWS his business in every phase of its operation.

The shop has 12,000 square feet of working space and is already a bit cramped for room, yet since the available floor space is so well divided into the different departments, there is no lost space which otherwise might be utilized. In addition to the usual type of ceiling flood lights, skylights are spaced conveniently so as to afford the workmen the best working light it is possible to have.

For outside calls such as breakdowns the shop has trucks painted in a distinctive attention-catching zebra stripe which has become so well-known that it instantly is associated with the Crowe Co.

Work at the Crowe shop includes complete automotive service for light trucks and all classes of passenger cars, but they do not cater to heavy truck work excepting for their tire department. The major part of the business is motor tune-ups and front end service, although their brake and wheel alignment departments are always kept busy. The shop is equipped to do all kinds of work—drum turning, king pins, bushings, wheel balancing, axle straightening, etc. In addition there is a tire recapping plant with moulds that is able to handle anything up to and including ten hundred by twenty-twos.

An approximate break-down of figures are available, and are as follows:

Tires, new and recaps...30%
Motor tune-up20%

procurable they are saving workmen's time, which means saving money!

For instance, Johnny Crowe states, if it takes five minutes for a lifting job because of slow-moving, worn-out or obsolete hoists, they are paying their labor merely for standing around, waiting until the lift is finished before they can get to work. But if they have a lift which raises a car in two minutes they have saved three minutes time right there. Of course this does not mean much of a saving on one particular job, but daily, weekly, monthly and yearly, if this were totaled up, it would amount to a surprising and staggering figure.

This idea was carried out when they mounted an air compressor and a power winch on a truck, and saved a considerable amount of time when compared with the use of hand winches. They claim there is no use in planning on a certain profit on a job, and then throwing it away because of excessive labor costs due to poor or faulty shop equipment.

Johnny Crowe is a firm believer in advertising through the medium of newspaper, phone books direct mail and billboards. At this time the Crowe Co. has eleven billboards located at strategic places on

(Continued on page 54)



"He used to be a window washer!"

AUTO-LITE



Sells "Travel Service" in America's Greatest Travel Year

With

**EXCLUSIVE
AAA
MAP AND
BOOK TIE-IN**

It's another Auto-Lite first—exclusive coverage of America's most travel-minded motorists. More than 7 million AAA maps and tour books, accommodation directories and other AAA publications carry Auto-Lite advertising. Reaches motorists when they are thinking, needing and **BUYING** parts and service. Identify yourself with this great program.



With

**NATIONAL
ADVERTISING
THAT POINTS
UP TRAVEL**

"Travel to break all records," says National Park Service. Auto-Lite puts this travel urge to work in national and farm magazines like American Weekly, Saturday Evening Post, Farm Journal, Liberty...reaching over 25,000,000 homes. Put up an Auto-Lite sign and make this greatest travel year your greatest year.

THE ELECTRIC AUTO-LITE COMPANY
Toronto, Ontario Toledo 1, Ohio



Dick Haymes Talks Travel, Too
AUTO-LITE RADIO SHOW
Thursday, 9:00 P. M. on CBS
150 Stations



Switch to—
AUTO-LITE SPARK PLUGS
IGNITION ENGINEERED BY IGNITION ENGINEERS

JULY, 1946

When writing to advertisers please mention Motor Age

Super Service Builds Volume

(Continued from page 52)

heavily traveled streets in the city of San Francisco, and the display advertising on them is changed often. They carry the usual type of advertisement in the classified sections of the telephone book, run newspaper ads from time to time calling attention to some specific branch of their business and of course make use of well-checked lists of names for direct mail advertising.

But there is one type of publicity they are firmly sold on, and that is the advertising afforded by their trucks, which they believe reaches more people every day than does any other kind of publicity. These trucks are on the streets of practically every section of the city every day, and it would be absolutely impossible to even hazard a guess as to the number of people who see them.

Although probably most people pass them by without conscious notice, yet after a while they begin to recognize the distinctive Zebra marking and sub-consciously think—"There's Johnny Crowe's truck again!" And when they are in need of automotive servicing they are not apt to search through the classified section of their phone book. They remember and call Johnny Crowe.

Station Owner Says Vehicle Pays for Itself

Harold Larson, proprietor of Larson's Marathon Service Station, Angola, Ind., says his Cushman, single cylinder service unit paid for itself in the first three months after putting it into use early in 1946. Runs up to 40 miles per hour, and about 500 miles on six gallons of gasoline. Its biggest saving is in moving cars around on the drive-in into position for servicing, and in road service. For example, a motorist or trucking operator calls in for tire service. Can run out in quick time, load the big "flat" in the trailer unit, bring in, fix, inflate, and take it out to the owner with least possible delay, and at low cost. Harold Larson,



Jr., is shown above at the controls on the service station lot just outside the business district of Angola, Ind.

Tom O. Duggan Leaves Thompson Products, Inc.

Tom O. Duggan has resigned his position as vice-president in charge of the Service Division of Thompson Products, Inc. to live in California where he started his career in the automotive parts distributing industry 32 years ago. Duggan said he had no definite plans for the future aside from taking a vacation after 15 years' service with the Cleveland parts manufacturing concern, and developing his personal affairs on the west coast.

In announcing Duggan's resignation, president Frederick C. Crawford of Thompson Products stated it was "accepted with keen regret by our management, and only after earnest effort to persuade him to stay on with the company and the division that enjoyed great growth under his leadership." A successor to the post vacated by Duggan will be announced soon, Crawford said.

A fluent writer, speaker and authority on car maintenance and parts distribution, Duggan addressed hundreds of automotive meetings. One of his best known contributions to the maintenance field is an 1800-page "Thompson Repair & Tune-up Manual" for auto mechanics. He has produced a number of sound movies for repair trade audiences.

New Wall Chart

A new spark plug specification wall chart showing manufacturer's specifications for 1946 automobiles will be available the latter part of June, according to F. A. Nealon, sales manager of the merchandising division of The Electric Auto-Lite Co.



"... my gosh! And five cents change!"

Smooth Horsepower



CASITE

GUARANTEES

BETTER AND SMOOTHER PERFORMANCE
OR DOUBLE - YOUR - MONEY - BACK

• A tight new motor needs the protection of Casite during the vital break-in period.

An older motor needs Casite to restore its power . . . to keep it clean and full of zip.

Casite carries oil quickly to the tight spots . . . reduces engine wear . . . retards formation of sludge and gum.

Millions use Casite . . . new millions are discovering it. Every car owner is a prospect. Call your jobber. Start cashing in on Casite today!

A Pint in the Crankcase Every Oil Change

A Pint Through the Air Intake Every Three Months

THE CASITE CORPORATION • HASTINGS, MICHIGAN

GUARANTEE—Add Casite to crankcase and run through air intake according to instructions, then drive your car 100 miles or for 60 days, whichever is first. If not convinced that Casite gives you better and smoother performance, you get double-your-money-back by filling out guarantee certificate and mailing it to The Casite Corporation, Hastings, Michigan. Maximum refund is \$1.30 per pint, twice the nationally advertised price of Casite.

65¢
A PINT



New Radio Show
"RIGHT DOWN YOUR ALLEY"

Coast-to-Coast
AMERICAN BROADCASTING COMPANY

EVERY SUNDAY AFTERNOON

4:30 Eastern Daylight Time
3:30 Eastern Standard Time
3:30 Central Daylight Time
2:30 Central Standard Time
1:30 Mountain Standard Time
12:30 Pacific Standard Time

Notes On Aluminum Alloy Bearings

(Continued from page 22)

between the bearing and its housing, the pressure between them must be held to a minimum. That is to say, the extension of the bearing above the parting line must be within the limits of .0015 in. to .0035 in. This will prevent that excessive crush which seems to be the thing most necessary to avoid. Another point to be noted is the ten-

dency of these bearings to shear off the locating devices; wherefore, the engineers urge the avoidance of stress concentrations such as sharp corners and recommend the use of large locating surfaces.

The new alloy lends itself readily to use in bushings, but it must be noted that it works best on hard shafts. Bushing wall thickness

varies within the limits of .060 in. to .100 in.

Among the companies now using aluminum alloy bearings as original equipment on some models may be listed Fairbanks, Morse and Caterpillar Tractor.

Passenger Car Tire Production Climbing

Passenger car tire production continued its steady climb to new peacetime records in April, reaching a total of 5,514,751 units.

The output represented a 3.85% gain over March production and brought the total for the first four months to 20,115,514 units as compared with 6,363,854 units for the same period in 1945, the Rubber Manufacturers Association reported recently.

Production of truck, bus and passenger car tubes gained 4.7% in April. Output of truck and bus casings, which in the larger sizes are now in nearly normal supply, declined .54% from March to 1,368,157 units, the Association said in its monthly report on estimated production, shipments and inventory of automotive pneumatic casings and tubes.

The report does not cover statistics on solid tires or on pneumatic tires for motorcycles, bicycles, or aviation, agricultural and industrial equipment.



HELPING YOU CARRY ON EXCHANGE SERVICE "AS USUAL"

Shortage of labor and lack of complete new units need not keep you from supplying replacement distributors. Your jobber of Wells Ignition Replacement Parts can help you carry on an exchange service "as usual."

Illustration above shows one section of Wells factory devoted to Wells Replacement Distributors built by Wells to exact specifications, and guaranteed as to correct fit and performance in Ford and Mercury cars.

"Inside Wells" — Ask your jobber to show you the pictorial story of what goes on at the Wells factory. It shows why the complete line of Wells Ignition Replacement Parts are of highest quality.

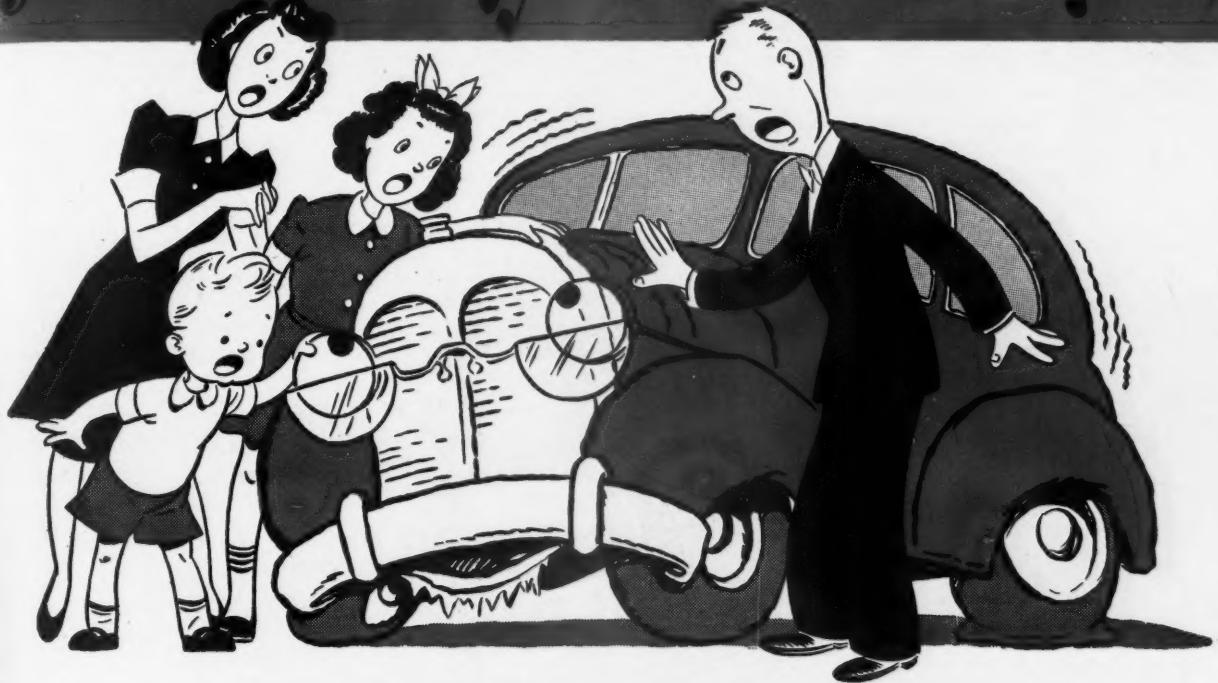
WELLS MANUFACTURING CORPORATION • Fond du Lac, Wis.

WELLS IGNITION
Quality Tells -- Demand WELLS

"Say, mister, could you tell me how to get to Main and Elm Streets?"



"Darling, you are growing old!"



but... **PERMITE PARTS** are engineered to give it **NEW LIFE** and **POWER**...

Looks like lots of jobs for you this year — and some mighty tough jobs, too. Today's age-weary cars will need the best parts, as well as your good workmanship, to keep them performing — safely and economically.

That's why so many of the servicemen are now installing Permite Replacement Parts. In making parts for jeeps, trucks, tanks and airplanes, Permite engineers helped establish new standards of dependable, durable performance. And every wartime improvement is now going into Permite Replacement Parts to give new power

and operating efficiency to today's cars, trucks and buses. Keep your customers happy by backing up your workmanship with Permite high quality parts.

The complete line of Permite Replacement Parts is quickly available to you through a coast-to-coast network of Permite Jobbers, supported by 55 conveniently located Warehouse Stocks. If you do not know the name of the Permite Jobber nearest you, please write us.

ALUMINUM INDUSTRIES, Inc.
Cincinnati 25, Ohio



PERMITE

R E P L A C E M E N T P A R T S

PISTONS
PISTON PINS
VALVES

VALVE GUIDES
VALVE STEM KEYS
VALVE SPRINGS

BOLT SETS
TIE-ROD ENDS
BUSHINGS

WATER PUMPS
WATER PUMP
REPAIR KITS

MUFFLERS AND
CLAMPS
TAIL PIPES

CYLINDER SLEEVES
WET SLEEVE
ASSEMBLIES

THERE IS A PERMITE JOBBER NEAR YOU

A Miss Almost Stumps Pop

(Continued from page 25)

"Pretty bad," said Pop.

"But I did the work exactly the way Larry told me," said Tommy.

"I'm not doubtin' your word," said Pop. "But we overlooked somethin'. Let me think."

He was silent on the way back to town. Then, as he turned into the street on which the shop was located, he said, "What number plugs

has Frank got in this job?"

Tommy looked blank. "I didn't notice," he confessed.

"We'll have a look as soon as we get back."

He ran the car up to the bench and got out. "Find out what number plugs they are," he said. "I'll take a peek at the manual."

Tommy was holding one of the

plugs when Pop returned. Pop took it. "Yep," he said, "number eight."

"Isn't that right?" asked Tommy.

"It's standard for this job," said Pop. "But Frank Monroe, so Larry says, is a cowboy. He drives hard and fast. It's been pretty warm lately, so the engine is bound to run a little hot." He handed the plug to Tommy and grinned. "Run around to Jack Davis's," he said, "and get a set of sevens. Put 'em in when you get back, but don't say nothin' to Larry."

Though puzzled, Larry did as he was told and, when he had installed the new plugs, Pop asked Larry to road-test the car. "I told you once I did road-test it," objected Larry.

"I think it's okay," said Pop.

Larry shrugged and drove out. Pop was on hand when he returned. Larry got out and slammed the door in disgust. "What gives around this joint?" he demanded. "What'd you do to it?"

Pop chuckled. "Put in cooler plugs, that's all."

The expression on Larry's face was that of a man who had promised to call his wife, and hadn't.

"Them plugs was the type the manual called for," said Larry.

"You didn't read it all," said Pop. "It recommends number sevens for hard drivin' in hot weather."

Larry started to speak but he began to suspect that Pop knew what he was talking about. He shrugged and went back to his work.

"What I can't understand," said

(Continued on page 62)

ONCE IT'S USED - NO SUBSTITUTE WILL DO

SI-EN-TIF-IK
MOTOR
RECONDITIONER

Proved
SUPERIOR
by actual
laboratory test

SI-EN-TIF-IK Motor Reconditioner developed by skilled chemists, is altogether different from anything else on the market. Its results are immediate! Cleans and rejuvenates old motors—keeps new motors **new**—actually does what others claim. This highly concentrated liquid safely and efficiently loosens and eliminates sludge, carbon and motor varnish—frees sticky valves and rings—stops bucking, knocks and pings—increases compression—gives your motor more power. Guaranteed to save gas and oil. Once you use it in your own car you'll see why your customers will keep coming back for more. Any way you look at it—for profit—for satisfaction—for repeat sales—**SI-EN-TIF-IK is Terrific!**

For Cars, Trucks, Tractors and Diesels.

SI-EN-TIF-IK Is Sold on a Money Back Guarantee

DISTRIBUTORS
Some territories are still open for this rapidly expanding line—Including Motor Reconditioner, Penetrating Oil, Brake Fluid, Metal Polish, Power Plus, Anti-Freeze and others. Exclusive contract. Write for further information.

**Biggest profit
from the first grows
Bigger and BIGGER
because it repeats!**

SI-EN-TIF-IK
PRODUCTS CO.

2301 So. LaSalle Street • Chicago 16, Ill.



Ben Franklin

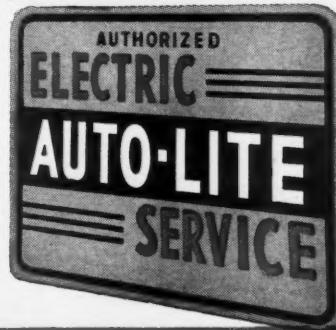
said it...

"Well done is twice done"



This sign identifies the seller of original factory parts.

This sign identifies an authorized Auto-Lite Service Station—ties in with Auto-Lite's great radio show and Classified Telephone Directory listings.



AUTO-LITE

✓ Starting ✓ Lighting ✓ Ignition

COAST TO COAST, SERVICEMEN REPEAT THIS SIMPLE FORMULA FOR SUCCESS...

There is no better basis for a sound business future than honest workmanship and original factory parts. The owners of 8½ million cars now on the road know that they can depend on Auto-Lite Service outlets for honest workmanship and original factory parts for their cars.

Auto-Lite is planning now to increase its service and parts distribution system. Garage and service station operators who are interested and can qualify under the high standards set up for Franchise holders can get full information from any Auto-Lite Central Distributor, or by writing to

THE ELECTRIC AUTO-LITE COMPANY

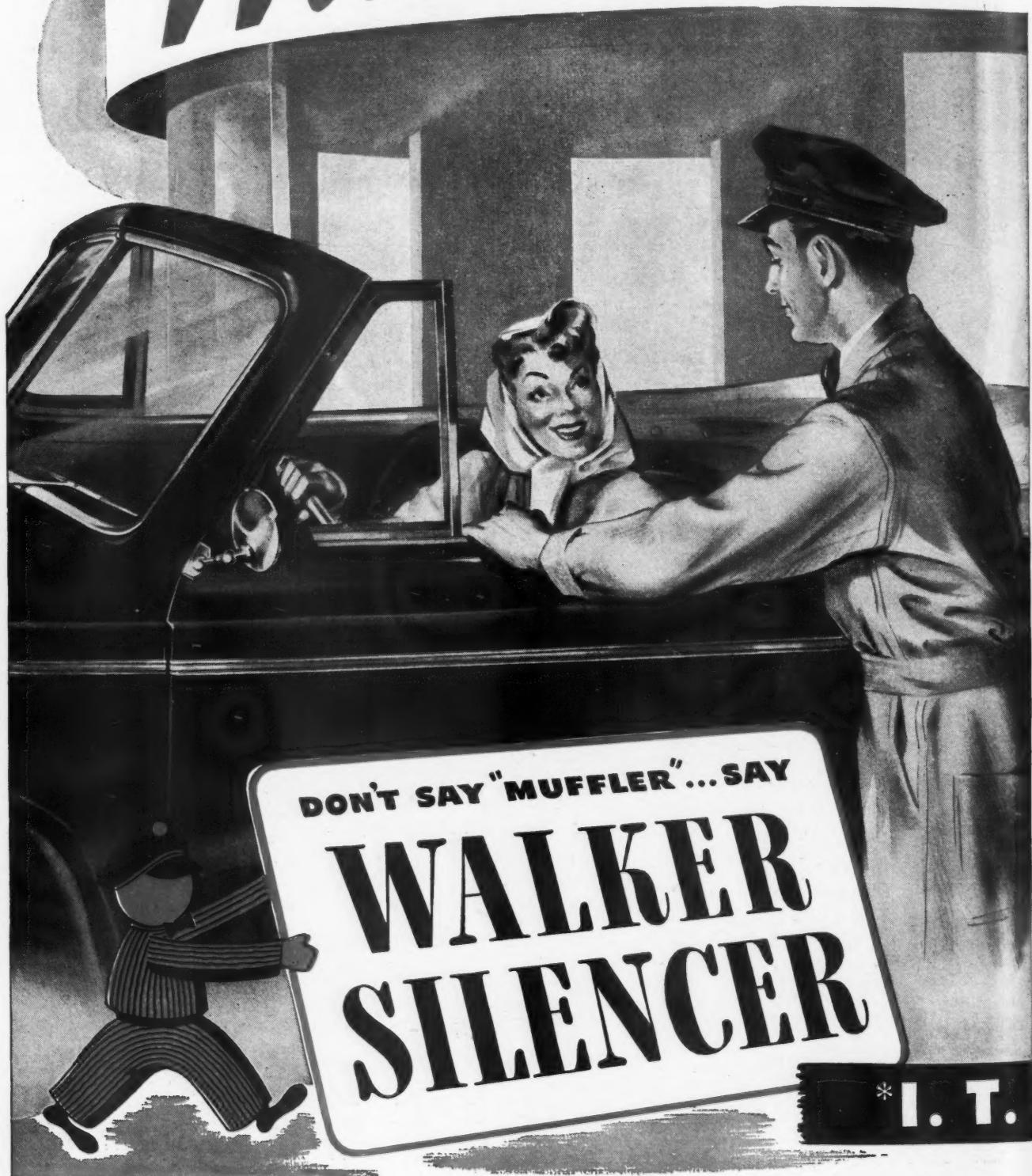
Parts and Service Division

SARNIA, ONTARIO

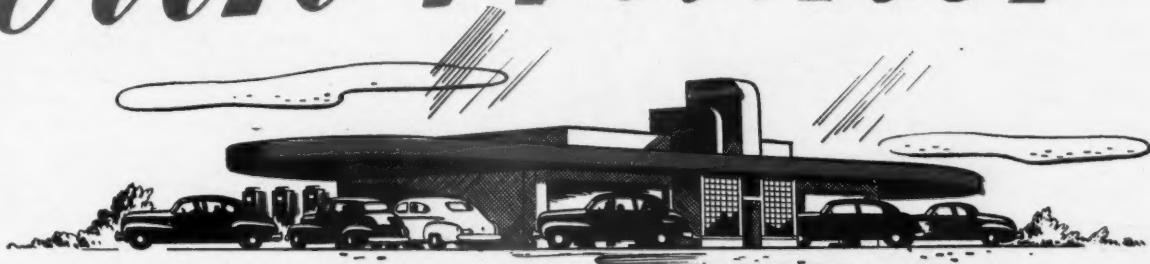
TOLEDO 1, OHIO

AUTO-LITE ON THE AIR—Dick Haymes, Helen Forrest, Gordon Jenkins' Orchestra—every Thursday night, 9:00 P.M.—E.T. on CBS

It's a
Walkaway



with Walker



Dealers Prefer

HIGH GRADE MUFFLERS FOR GREATER CUSTOMER SATISFACTION

"Individual Tuning" tolerates no compromise with quality. In Walker Silencers, research, design, engineering and production all combine to achieve a standard of performance—not a standardized construction.

• Dealers were asked, in a recent, far-reaching, independent survey, whether they preferred a cheap muffler or a high grade muffler. 84% of them emphatically stated they wanted quality—they wanted the best. The big reason, they said, "better satisfied customers—fewer complaints."

From the very beginning Walker Silencers have been built to a standard of quality so high that they *demand* complete confidence. To achieve and maintain this position, Walker has the finest exhaust system research laboratory in the world, equipped with the finest and most delicate of scientific instruments. Many of these were created by Walker en-

gineers for their own exclusive use.

But above all, Walker has the knowledge and scientific skill of creative men . . . years of pioneering research . . . experience and know-how . . . a background not found in textbooks, not available to others.

This is the *Margin of Difference* that makes Walker "Individually Tuned" Silencers the finest engineered muffler you can offer your customers. This, too, is the reason you can bank on Walker Silencer performance without fear of comebacks. And that spells *sure profits* and an ever-increasing number of satisfied customers who remain customers.

WALKER MANUFACTURING COMPANY OF WISCONSIN • RACINE, WISCONSIN

Also Makers of Walker Jacks and Electric Lifts

Use Super-Kwick—new super-fast rust-buster for removing rusty exhaust systems without tools except necessary wrenches.

MAKES THE DIFFERENCE

**"INDIVIDUALLY TUNED" TO EACH MAKE AND MODEL OF CAR

JULY, 1946

When writing to advertisers please mention Motor Age

With the
Patented
"Louvered
Tube"



Pop O'Neill

(Continued from page 58)

Tommy, "is that the plugs we put in look as if they had shorter porcelains than the ones we took out. You'd think they'd get hotter than the longer ones."

Pop pulled a piece of cloth from a coverall pocket and wiped his hands. "It's funny," he said, "but everybody in the game used to think the same thing years ago. The

longer the insulator, the cooler runnin', they used to say. But then somebody got inquisitive and made a lotta tests. They found out that the shorter the porcelain, the faster they pass the heat to the block. That meant they were cooler runnin'."

"You'd wonder how everybody could be mistaken like that," said Tommy.

"There ain't nothin' strange about it," said Pop. "Most people

believe what they read or hear. They're too lazy to find out the truth for themselves."

"I don't know about that," said Tommy.

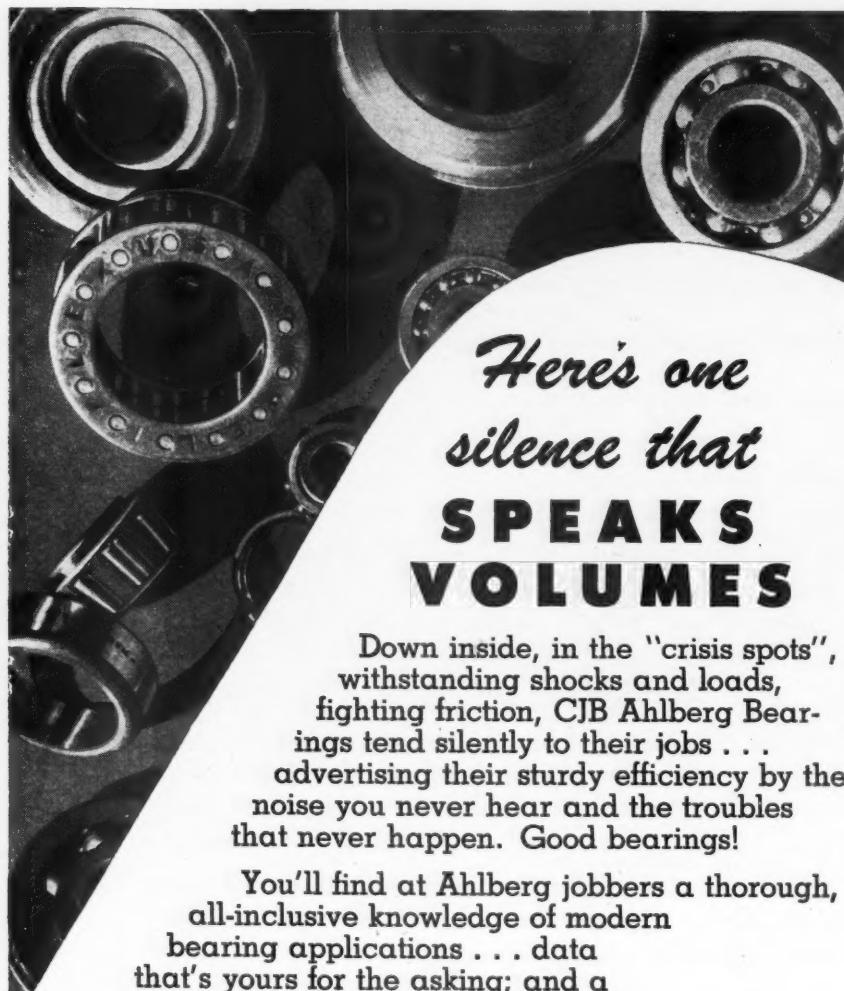
"No? Did you ever read newspaper columnists?" Tommy nodded. "Remember yesterday's paper? One columnist said Senator Whosis was a bum. On the same page, another columnist said he was a hero. But will anybody take the trouble to find out that Whosis is just an ordinary guy, tryin' his best to hang onto a job that pays pretty good dough? No. They read one columnist and take his prejudices for gospel. But," he said, glancing at his watch, "I shouldn't talk about politicians. They always make me burn."

"Maybe you need cooler running plugs," suggested Tommy.

Memphis Dealers Elect New Association Head

J. J. Corbitt, of the Corbitt Motor Co., Memphis, Tenn., has been named new president of Memphis Automobile Dealers Association. He was elected May 20 as successor to Will Pryor.

Other officers elected are: Charles Creath, of Bluff City Buick Co., vice president; E. (Chuck) Hutton, of Chuck Hutton Co., secretary-treasurer. Directors, W. H. Fisher, of the John T. Fisher Motor Co. and John Wellford, of the John Wellford firm.



*Here's one
silence that
SPEAKS
VOLUMES*

Down inside, in the "crisis spots", withstanding shocks and loads, fighting friction, CJB Ahlberg Bearings tend silently to their jobs . . . advertising their sturdy efficiency by the noise you never hear and the troubles that never happen. Good bearings!

You'll find at Ahlberg jobbers a thorough, all-inclusive knowledge of modern bearing applications . . . data that's yours for the asking; and a complete line of ball and roller bearings of every type, to implement that counsel.

- Heavy Duty
- Thrust Load ● Radial
- Self Aligning



AHLBERG
BEARING COMPANY

3028 WEST 47TH STREET
CHICAGO 32, ILLINOIS



"You went through on the red light—
he got through on the amber!"



One of the most reliable parts of an engine is the AC Fuel Pump, heart of the fuel system. That's because it's *first quality* in design, material, and manufacture,—built to meet the engine maker's own requirements.

Serve your customers best, and protect your own reputation, by replacing worn pumps with new or factory-rebuilt AC's, and making repairs with authentic AC Parts Kits or Diaphragm Kits.

QUALITY FEATURES

- ★ Careful control of pressure and flow assuring correct fuel supply.
- ★ Accurate hardening, precision machining of parts essential to long life.
- ★ Accurate control of spring tensions and temper.
- ★ High, and controlled, pin hardness.
- ★ 4-layer, patented-impregnation diaphragms of special airplane cloth.
- ★ Carefully finished rocker arm pads, located to center on cam.
- ★ Split-hair rocker arm clearance and control of pad hardness.
- ★ Uniform pull rod hardness at pin holes.

AC FUEL PUMPS

— SEND FOR AN AC PUMP SHOP MANUAL —
Field Service Department, AC Spark Plug Division, G. M. Corp.
910 Mott Foundation Building, Flint 3, Michigan

Gentlemen: Please send at once, no charge, the AC Shop

Manuals checked:

How to Service Spark Plugs HOW TO SERVICE FUEL PUMPS
 How to Service Spark Plug Cleaner How to Service Air Cleaners
 How to Service Oil Filters How to Service Speedometers
 How to Service Ammeters and other Instruments MA-7

NAME _____

FIRM _____

STREET ADDRESS _____

CITY _____ STATE _____

Lighting Up Your Shop

(Continued from page 29)

give as much light as filament bulbs for less than half the power consumed. Now to light the original closet with fluorescent tubes to practically the same level as was attained with the 500 watt filament bulb, we need only five 40 watt tubes. You will have to admit that it is seldom you can come so close to eating your cake and keeping it.

By this expedient of the closet the effect of windows, paint, reflecting surfaces, and such, were temporarily avoided. It has simply been shown that for every 100 square feet of your shop's floor area you will need one 500 watt filament bulb or a group of five 40 watt fluorescent tubes, either being placed ten feet above the floor on ten foot

centers. In most treatises on the subject of light many pages of obtuse calculation are devoted to the effect of sunlight on the interior illumination. But that is a waste of time as it is necessary to provide sufficient light for night work, so the subject of sunlight is tossed out of the window.

Now that the collection of closets, bless 'em, and your shop have been identified as one and the same, we can point with pride. Every ten feet in all directions and hanging ten feet in the air are lights. Not so bright as day nor even a south sea moon, yet so much lighter than before, oh customer, is your shop that you will find your work easier. That missing wrench will now be seen in the corner. The quarter that rolled away so long ago, reposes now in sight. The effect on your spirits, too, is not one to be avoided. Happy as a June Bug, you will notice with pleasure the increased accuracy of the hands and the general ease of doing work in a nicely lighted spot.

The use of fluorescent tubes instead of filament bulbs will not only make the light you get cost less per hour, but it will also improve the shop's appearance. Best results stem from lines of fluorescent lights. The appearance part is improved and the light intensity is increased. The installation also costs less with rows of lights on each circuit.

(Continued on page 66)

FIRST
Because It
LASTS...

It's the Olier Oil!

That's why AMALIE Pennsylvania Motor Oil makes such a hit with dealers and users both. Dealers find that AMALIE's greater oiliness is an outstanding sales point . . . users find that AMALIE's greater oiliness means better protection.

AMALIE Motor Oils and Lubricants are backed by planned merchandising which means year-round sales and profit opportunities for you. See nearest AMALIE Distributor, or write . . .

Dept. O7

AMALIE DIVISION
L. SONNEBORN SONS, INC.

88 LEXINGTON AVENUE, NEW YORK 16, N. Y.
Refineries: Petroleum and Franklin, Pa.
Plant: Nutley, N. J.

In the Southwest: Sonneborn Bros., Dallas 1, Texas



"Aha . . . just as I suspected,
imitation pearls!"



"Give 'em what they want, Mister"

Car and truck owners, too, know what they want.

When it comes to replacement parts for their vehicles, they want parts performance that measures up to the high standards originally set by the vehicle manufacturers' engineers.

That's why it pays off in more customer good will when you install *MoPar* factory engineered and inspected parts in vehicles built by Chrysler Corporation Divisions. You give better service . . . and better please your customers.

NOTE TO ALL REPAIR SHOPS: If you need parts of any kind for a Plymouth, Dodge, De Soto, or Chrysler, obtain them from a dealer for these vehicles. For Dodge truck parts, see a Dodge dealer.



Plymouth

DODGE

DeSoto

CHRYSLER

DODGE *Job-Rated* **TRUCKS**

CHRYSLER CORPORATION—PARTS DIVISION, DETROIT 31, MICHIGAN

Lighting Up Your Shop

(Continued from page 64)

For detailed work on the bench, a low hung light of low intensity is more to be desired than a drop light. The difference in brightness between the average light in the shop, and the area under the special light on the bench, should not be over 10 to 1. The eyes are like cameras, a terrific difference in brightness between one spot and an-

other, tires them, as it takes time to adjust and the adjusting requires effort. Incidentally, the eye will always turn to the point of greatest brightness. In proof thereof, remember the effort required to keep from looking into the other guy's headlights. That is why modern lighting strives for a uniform level of illumination. Uniform illumination will bring more uniform results. It is remarkable what a saving in energy will result from the application of this simple idea to

the lighting of where you are.

Now to mention the variables which have been avoided. The figure of 30 foot-candles is that suggested by lighting engineers as the most suitable for repair shops. They also advise 10 foot-candles for car storage live, and 2 for dead. However, this opus is for repair shops, and it is figured that the storage areas will not bemoan the neglect. The proportions of the room to be lighted have a great bearing on the watts needed. This is mainly due to the absorption of light by the walls, and for our illustrative closet, we used a collection of tables which gave weight to this factor. However, in the table accompanying this article it was averaged out. The engineers speak in the most exact of terms, but the truth is that a variation of 10 foot-candles cannot be noticed. There is therefore no need to follow the table exactly, a variation of 50 watts will make but little difference.

In the accompanying table, the use of "watts per fixture" is merely to make things easier to understand. In reality the number of fixtures to carry the watts recommended for the selected mounting height can be whatever is convenient. The seeker after light is, however, warned to hang the many fixtures evenly over the area that would be lit by one fixture at that

(Continued on page 68)

Central Mike Says:

"EVERY MECHANIC NEEDS THESE 2 SETS!"



SET NO. 745 RL
OUTSIDE MICROMETERS
Range 0 to 4 inches.
\$46.50

Complete with Ratchet Stops, Lock Nuts, Standard Test Gauges and DeLuxe Hinged Plush-Lined Case



SET NO. 808
INSIDE MICROMETERS
Range 1 1/2 to 8 inches.
\$12.00

Complete with Extension Handle and DeLuxe Plush-Lined Case



WRITE TODAY FOR CATALOG NO. 17
The entire line of individual micrometers and complete sets illustrated and fully described.

THE CENTRAL TOOL CO., AUBURN, RHODE ISLAND



"Have we any horns that whistle instead of honk? He wants one for signaling girls!"

How bright
are you
about
lights?



**REMEMBER THESE FACTS AND
YOU'LL KNOW ALL THE ANSWERS**



There's NO DIM-OUT with Guide Sealed Beam units.
Guide Sealed Beam headlamp units stay bright. They keep on providing proper illumination because they are permanently sealed against dust, dirt and traffic film.



There's NO BLACK-OUT with Guide Sealed Beam units. With Guide, a cracked lens does not make a "one-eyed" driver. A separate bulb inside the unit continues to afford safe lighting until the damaged unit can be replaced.

Give your customers the double protection of Sealed Beam lighting at its best. Guide Sealed Beam units cost no more — they build customer satisfaction and goodwill for you.

Safe Headlamps are "Correctly Aimed" Headlamps
—Check Your Customers' Headlamps Today

GUIDE LAMP — A UNITED MOTORS LINE

Guide Sealed Beam replacement units and Guide lamp service parts are sold by United Motors Service distributors.

LET SAFETY SHARE THE RIDE—REPLACE WITH GUIDE



Lighting Up Your Shop

(Continued from page 66)

height. A table of watts per square foot at selected mounting heights is added to permit the ambitious to figure a mounting system of their own.

A major factor in lighting is the cleanliness of the shop. *Clean, light colored paint* is needed for efficient lighting. A lighting engineer's nightmare would be an economy-minded customer insistent on black

paint. The fixtures and bulbs, or tubes, should be washed periodically. Factories with thousands of lights find it very profitable to keep them clean and the saving, like a tax exemption, is there for all admirers of soap; no matter how few the fixtures. The engineers refer to cleanliness as a maintenance factor and set great store by it but to save some people embarrassment it has been averaged out in our table.

There is a great difference in the results obtained from different fix-

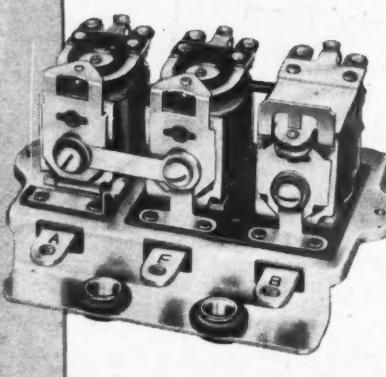
tures, even of the direct type, so our mythical closet and the table are calculated for the use of the plainest direct lighting fixture available.

Mounting Height	Watts Required for Each Square Foot of Area at that Height for 30-Foot Candles		
	Filament Bulbs	Fluorescent	Tubes
8	3.57	1.43	
9	3.70	1.73	
10	4.08	1.82	
12	4.12	1.87	
14	4.42	1.91	
18	4.82	1.98	

it's not the oyster
but the PEARL that COUNTS!

And it's not just any ignition product, but the P&D product that helps you do a gem of a job on electrical or tune-up work for your customers!

Made of highest grade materials and the best type of skilled workmanship, the P&D ONE complete quality line of starting, lighting, ignition replacement parts and coils is the finest you can handle. With P&D you minimize inventory problems, make steady customers of prospects.



THE MARKS OF QUALITY IN
P&D VOLTAGE REGULATORS

- Each part fabricated from the best material for the functional duty intended, known to the art.
- Each part precision fabricated to assure complete functional performance with ample reserve to meet any and all service contingencies.
- Constructed and designed to instantly and correctly match generator output to battery functional requirements under all temperature and field service conditions.
- Rugged construction combined with precision sensitive response to assure trouble-free performance.
- Sealed factory adjustment with temperature compensation assures immediate accurate and satisfactory operation when installed as directed.

P&D

MANUFACTURING COMPANY, INC.

LONG ISLAND CITY, NEW YORK

STARTING • LIGHTING • IGNITION • REPLACEMENT PARTS

P&D MANUFACTURES ONLY ONE COMPLETE QUALITY LINE. ONLY THE FINEST MATERIALS AND WORKMANSHIP AVAILABLE ARE EMPLOYED



"Nope—no 'coon in here!"

Portable Drilling- Drill Press Work



This One Tool has
Power for BOTH!

The Van Dorn $\frac{1}{2}$ " Standard Portable Electric Drill is one of the most versatile and useful tools in any automotive shop. As a portable tool it drives twist drills up to $\frac{1}{2}$ ", wood augers up to 1", Hole Saws for cutting clean, round holes up to $3\frac{1}{2}$ " diameter for installing radios and heaters. An excellent tool for drilling out broken bolts and studs, and general use in body and chassis repair.

Mounted in a Van Dorn Drill Stand, the same drill becomes a powerful drill press . . . with 6-to-1 leverage for heavy-duty work . . . with a slow, smooth feed for more delicate work. Performance like that has created a big demand for these Drills. But Van Dorn Drills are well worth the wait . . . when you figure that time as an investment in better work . . . faster work . . . more profits!

For complete information on these Drills . . . and help on any tooling problem . . . see your Van Dorn Distributor. For complete catalog of Van Dorn Drills, Sanders, Valve Resurfacers, Valve Seat Grinders and other Electric Tools for automotive work, write to: Van Dorn Electric Tool Co., 727 Joppa Rd., Towson 4, Md.

For Power Specify

"Van Dorn"

(DIV. OF BLACK & DECKER MFG. CO.)

PORTABLE ELECTRIC TOOLS

Van Dorn $\frac{1}{2}$ " Standard
Portable Electric Drill
in a No. 40
Bench Drill Stand

Other Drills from $\frac{1}{4}$ " to $1\frac{1}{4}$ "
Drill Stands for All Sizes

Starter Motor Maintenance

(Continued from page 31)

motor will operate. This connects the cranking motor directly to the battery, and if the cranking motor is in normal condition, it will operate. If it does not operate, this would mean that the trouble lies in the control circuit and the vacuum switch, solenoid and solenoid relay must all be checked to locate the

trouble. Don't overlook this step.

The quick checks we have discussed will, of course, often disclose the source of trouble, but there are many times when a more complete analysis of the cranking motor system is desirable. This more complete analysis would start at the battery and progress from there to

the cranking motor drive pinion. The battery should be checked not only with a hydrometer, but with a low reading voltmeter to determine whether it can maintain voltages under load. If it cannot, the battery is probably wearing out or is becoming defective. The voltmeter check (also called load check) can be performed if the electrolyte gravity is 1.225 or above. If it is below that figure, the voltmeter check does not mean very much. Make the check by using the cranking motor and measuring the cell voltage with a low reading voltmeter during cranking (Fig. 2). Check all three battery cells within 15 seconds and never crank more than 30 seconds at a time to avoid overheating and damage to the cranking motor. If the cell voltages drop below 1.5 volts or if there is a difference of more than 0.2 volts from one cell to another, possible battery trouble is indicated and the battery should be removed for a complete recharge followed by another voltmeter test. If this second test also shows one cell low in voltage that cell probably has a partial short circuit in it.

Battery cable connections and cables should be checked to make sure that they are tightly fastened and in good condition. The connections and cables can be electrically tested by using the low reading voltmeter and checking as shown in Fig. 3 during cranking.

(Continued on page 72)



REPLACEMENT PARTS

IT WILL PAY YOU to install MASTER replacement parts on all of your repair jobs. MASTER parts fit like the originals. Your Jobber can supply you. Ask him today!



A
DEPENDABLE
MANUFACTURING
SOURCE OF
SUPPLY

CHEFFORD MASTER MFG. CO., INC.
(Dep't B) FAIRFIELD, ILLINOIS



Don't smile, please!"

Heat doesn't pile up in LO-EX* pistons



Heat is distributed fast and evenly in LO-EX Pistons. No piling up of heat—no hot spots to cause trouble.

When buying replacements, ask for pistons bearing this mark of quality—LO-EX, by Alcoa.

*Registered trademark

ALUMINUM COMPANY OF AMERICA
2133 Gulf Building, Pittsburgh 19, Pa.

LO-EX
REGISTERED TRADEMARK

PISTONS OF

ALCOA FIRST IN ALUMINUM



Starter Motor

(Continued from page 70)

Note that the voltage drop between the grounded battery terminal and the car frame, between the car frame and cranking motor frame, and between the insulated battery terminal and the insulated cranking motor terminal are all checked. If there is more than 0.1 volt drop in any circuit, the resistance in the

circuit is probably excessive. This excessive resistance can be eliminated by cleaning and tightening connections, or replacing cables if cable strands have been broken. As a next step the cranking motor cover band should be removed so that the brushes and commutator can be inspected (Fig. 4). Connections and brush leads should be tight and the brushes should be making good contact with the commutator. If the commutator is

dirty, it may often be cleaned by holding a piece of No. 00 sandpaper against it with a piece of wood, while the cranking motor is operated. Moving the sandpaper from one to the other end of the commutator will usually clean it up satisfactorily. If the commutator is excessively dirty, rough, out-of-round or has high mica, then the cranking motor should be removed so that the armature can be placed in a lathe and the commutator turned down and mica undercut. If some commutator bars are found to be burned, with other bars fairly clean, it indicates that the armature has open circuited windings. The burned bars result because every time a bar which is open circuited passes under the brushes, a heavy arc takes place, and this arcing soon burns the bar. If the bars are not too badly burned, it is possible to save the armature. Most opens will be found to occur at the commutator riser bars. This is usually the result of excessively long cranking periods which cause enough heat to develop to melt the solder holding the leads in the riser bars. The solder is thrown out and poor connections result so that the bars burn. To repair an armature in this condition, resolder the leads in the riser bars using rosin, not acid flux, and then turn down the commutator in a lathe and undercut the mica.

(Continued on page 74)



LEMPCO Pressurematic Power Presses are fast, powerful, adaptable. They can be used for straightening, bending, pressfits and many other automotive maintenance jobs.

Star performance is assured because of the many exclusive features offered by the Pressurematic: foot pedal controls, adjustable bolster, movable ram-head and extra rigid construction. Automatic pressure control reverses ram at any pre-set pressure. Electrically driven models in 20, 40 and 60 ton capacities. Manually operated hydraulic models in 40 and 60 ton capacities. These features save man-power and money . . . assure you of greater profits and increased shop efficiency.

Write for illustrated catalog that lists full details and special features offered by Lempco Pressurematic Power Presses.

LEMPCO

5727 DUNHAM ROAD
BEDFORD, OHIO



"Uncle Sam collects quarterly, so I decided to follow suit!"

Amazing! *Revolutionary!*

EDELMANN'S NEW No. 80

Self-Calculating

FREEZ-D-TECTOR

New

**A TURN OF THE
CAP CALCULATES
FREEZING POINT**

New

**ONLY ONE COLUMN
OF FIGURES VISIBLE,
ONLY ONE NUMBER
TO READ**

New

**RADIATOR CAPACITIES, FIRST
FILL AND REFILL TABLES IN
PLAIN VIEW.
No Separate or Wall Charts**

New Throughout!

ELIMINATES GUESSWORK

Instantly GIVES ALL INFORMATION NEEDED
TO MAKE A SALE OF ANTI-FREEZE

**A Large, Beautiful Instrument
You'll Be Proud To Own!**

**GET READY NOW FOR BIGGER, EASIER
PROFITS NEXT FALL AND WINTER . . .**

**STURDIER, SIMPLER
EASIER TO READ**

PRICE

\$5.75

TO DEALERS

**WORTH
MUCH MORE**

TESTS
ZEREX
ALCOHOL
ZERONE
TREK
SUPER-PYRO
"PRESTONE"
Brand
Ethylene
Glycol

Illustration
Approx.
1/2-size



E. EDELMANN & CO.
2332 LOGAN BLVD., CHICAGO 47, ILL.

**ORDER FROM YOUR
JOBBER TODAY!**

Starter Motor

(Continued from page 72)

On Bendix type cranking motors, it will sometimes happen that a drive spring will break or be wrapped up, or that the drive housing will break. These conditions almost always result from improper cranking motor operation. For example, engaging the drive pinion on an engine rockback, as for instance, after a false start,

will throw a tremendous strain on the drive mechanism since the flywheel is moving in one direction while the drive pinion goes into mesh moving into the opposite direction. Back-fires while cranking also produce a similar result.

It sometimes happens that on an overrunning clutch cranking motor, thrown armature windings are found. These windings are thrown out of the armature core by centrifugal force resulting from the armature being spun at high speed.

This is usually due to an inoperative overrunning clutch which failed to overrun freely. The clutch originally became inoperative because the operator opened the throttle too wide on initial starting, or he kept the throttle open too long after starting took place. Either condition puts an excessive strain on the overrunning clutch causing it to overheat so that the lubricant melts and runs out.

Ultimately, this type of abuse causes the overrunning clutch to seize or bind so that the armature is spun at high speed and the windings are thrown out.

New Chrome Cleaner

To solve the problem of rusty chrome, the Plasti-Kote Co., Cleveland, Ohio, offers "Krome-Kit," a two-bottle package containing a chrome cleaner, and a liquid coating protecting against rust. The chrome cleaner is said to dissolve rust from any chrome, brass, copper or shiny metal surface, imparting a high polish with a few brisk rubs. The chrome preserver is a clear plastic material that will coat the metal without discoloration.

Said to resist cold, water, alcohol, salts, oils, and greases, the protective finish is recommended for chrome trim on automobiles, golf clubs, bathroom fixtures, electrical appliances, etc.



**THE
ONLY GAGE
THAT HAS
A BUILT-IN
FLOOR SLOPE
COMPENSATOR**

LOW-PRICED

Handiest camber-caster gage ever invented. Designed for the mechanic who wants a simple, inexpensive device for doing the job quickly and accurately.

The only gage that has a built-in floor slope compensator. (Patented.) Once the gage is set to the floor slope, the slope is automatically compensated for in all readings.

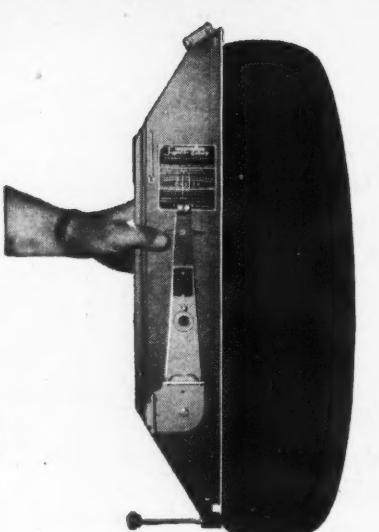
**DOES THE JOB
IN $\frac{1}{3}$ THE TIME**

Write for
Literature

MICRO-LINOR SERVICE CORP'N

1623 W. Fort St.

Detroit 16, Mich.



FASTER

Checks floor slope and one wheel for CAMBER in 30 seconds.

Checks floor slope, CASTER and CAMBER on both wheels in 3 minutes.

LIGHTER

Weights only 3 lbs.

SMALLER

Only 24 inches long.

MORE ACCURATE

Automatically compensates for floor space.



"He's the new Mexican sensation!"

IN ACTUAL USE

from Maine to California, in every type of automotive vehicle, Toledo parts have been proving their exceptional worth for almost a half century. The position of Toledo in the industry is unassailable. No wonder thousands of "America's Men Who Know Motors" continue to specify Toledo. For parts from Toledo's factories, which are standard equipment in so many of our new cars, trucks, buses and tractors, lead the field in replacement preference. And here is why—

IN MANUFACTURING . . TESTING RESEARCH . . ENGINEERING

*There are no Finer Automotive Parts
in All the World Than
Genuine TOLEDO*



The TOLEDO

STEEL PRODUCTS COMPANY • TOLEDO, OHIO, U. S. A.
SINCE 1906

Makers of Fine Automotive and Aircraft Parts

Selling Power

(Continued from page 32)

get the franchise. Then he visited each office. His approach was masterly. "I'm Harold," he said, beaming at us with a contagious smile. "I'd like to shine your shoes, anytime or regularly. I'd like to give you a sample of my work."

Yielding ourselves gratefully to his ministrations, we pondered over this phenomenon. Here was a busi-

ness man actually seeking business. Here was a salesman really going after an order. Long accustomed to bored supply men accepting orders languidly, or with noticeable restraint, Harold was a tonic. He actually seemed to want our business, came in and asked for it, was enthusiastic in his selling, and waited anxiously for our verdict after he had shined up our old kickers so they shone as resplendently as when new.

Harold got our shoeshine business. He will continue to get it as long as he shines shoes as good as his first "sample." He will still have it even when the honeymoon is over, and he may flag a little in his effort toward perfection. We're human, too, and don't expect Harold to be always at his best. We're not always, either.

For our money, Harold is one of the best salesmen we have encountered in a long time. He did a really masterly job of salesmanship. First, he "got the franchise," as he put it, to solicit customers in our offices. Our office manager had to be sold. Harold convinced him.

Then Harold had to visit each shoeshine prospect and sell each one individually. I found out that he had sized up each man at a glance and said about the right thing calculated to put that prospect in a receptive good to Harold. Then he had clinched each sale by offering a sample shine. So good were the shines that each man paid willingly, adding a handsome tip to boot.

And on all prospects, now become customers, Harold used his smile and contagious good humor—passports to human interest and regard everywhere—the universal symbols of fellowship and salesmanship.

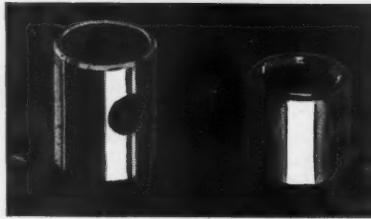
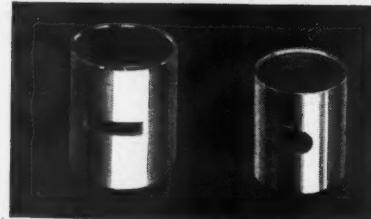
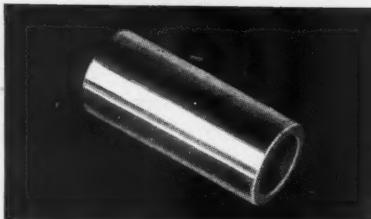
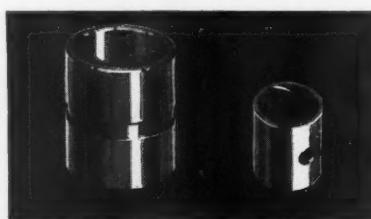
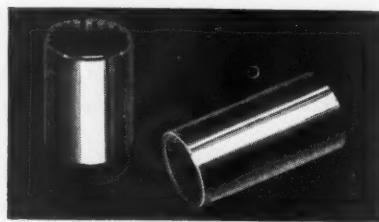
Whether you sell shoeshines, automotive repairs, motor cars, accessories, bridges or twine, your object is to get the other fellow to do what you want him to do. You encounter disinterest, inertia, sometimes downright suspicion, and always the prospect's instinct of caution, plus human stubbornness.

If, like Harold, you have planned your selling program ahead of time, you are over the first hurdle. If, like Harold, you understood human differences and adapt your approach to fit the personality of each man, you'll clear your second hurdle. If, like Harold, you reflect genuineness and sincerity, you disarm suspicion, and if you are as friendly and good-humored as Harold, you are over.

That first order counts the most—to both you and your customer. Harold knew that. You could see the shine on our shoes a square away. Back up your first sale with top service, and, like Harold has us, you'll have them for life.

Johnson Starter and Generator Bushings

Reasonably good delivery is now available on Johnson Bronze Starter and Generator Bushings. The same is true of related parts such as water pump, steering knuckle, clutch pilot, propeller shaft, spindle and spring bushings. And every item in the line is the same genuine top quality . . . identical in precision and finish with original equipment. There are no second or third grades of Johnson Bronze merchandise. Why not check over your needs now? Determine in advance what your requirements are going to be—then send in your order. Write for a copy of our complete catalogue NOW.



JOHNSON
SLEEVE BEARING
455 S. MILL STREET

BRONZE
HEADQUARTERS
NEW CASTLE, PA.





AS MAKERS OF high precision replacement parts, we know how important it is to protect engine parts during the critical breaking-in period. That's why Thompson Aerotype Break-In Oil was developed — to insure correct lapping in of new parts—by preventing abrasive friction, scuffing and scoring.

Thompson Break-In Oil is refined from a pure paraffinic base, with patented compounds added to maintain a constant, protective film over high-finish surfaces under heat, and also inhibit formation of hard carbon, "engine acids" and sludge. *It is not an additive . . . you fill up the crankcase!*

Use Thompson Break-In Oil to protect your own good work, give your customer better results, and make an extra profit in the bargain.

Insure New Car Performance, Too

Thompson Aerotype Break-In Oil is the best insurance a NEW engine or a REBUILT engine can have during the running-in period. Close fitting parts in modern high-compression engines need the extra protection that Thompson Break-In Oil provides. It is also a superior "regular service" oil for fleet and other heavy-duty operation.

Get it from Your **Thompson Products** *Distributor*

CLEVELAND • DETROIT • LOS ANGELES

NOW GET ALL 4

Everytime WITH...

KEEP
OIL
DOWN

SMOOTH
NEW
MOTOR
OPERATION



THE SURPRISE PACKAGE OF THE YEAR

AT LAST . . . Piston rings that do a complete job—that do all FOUR:
1. Keep Oil Down; 2. Keep Power Up; 3. Give Smooth New Motor Operation;
4. Give Longer Life. They were designed for Uncle Sam—they'll work for you. Your McQuay-Norris jobber has them now.

A POST-WAR DEVELOPMENT OF MCQUAY-NORRIS

LEAK-PROOF

REG. U. S. PAT. OFF.

PISTON RINGS

LONGER
LIFE

KEEP
POWER
UP

AND THEY'RE
GUARANTEED!

Yes, guaranteed to give satisfactory performance for 10,000 miles or one year, whichever shall occur first, under the McQuay-Norris LEAK-PROOF Piston Ring Replacement and Labor guarantee, a liberal plan with no red tape.

MANUFACTURING CO. ST. LOUIS 10, MO. U.S.A.

Low-Priced Cars

(Continued from page 48)

prospects indicating possible further increases in car prices, it is obvious that nearly 25 million families with incomes under \$3,000 do not represent the lush market potential they did before the war. This appears to be borne out by the experience of one large dealer in Detroit. He reports that his com-

pany, one of the Big Three, compiles reports showing the type of purchaser now buying new cars. The report shows an overwhelming preponderance of sales to executives, professional people, and businessmen, with only a small part going to factory employees. The dealer says that in his case before the war he sold a large proportion of cars to factory employees, but, that to date he has not made a single sale to a factory worker. Both he and

the company are worried over that situation.

Another factor influencing introduction of a lower-priced new car is the absence of a normal used car market. Buyers who, in normal times, would turn to a used car for transportation no longer can do so because of the limited supply brought about by cessation of production of new cars for nearly four years. Automobiles now comprising the used car market are at least four years old, and most of them are much older. Many should have been scrapped long ago. As a result, the used car market will be sketchy for a long time yet, and probably will not get back to the prewar rate of turnover for two or three years at least. In addition, the large backlog of demand for new cars and production prospects over the next year or two do not auger well for channeling turned-in 1945 and '46 models into the used car field in any appreciable quantity. Consequently, if new lightweight cars are available at a price formerly paid for a good used car, buyers would turn in that direction.

Other considerations that may be influencing introduction of a lower priced line are the advantage of having a greater price range to offer, and the value of having in production a car that will sell in case of a recession, when more expensive models might not be down-priced fast enough to avoid a slump. Another possibility that has been men-

(Continued, on page 82)

Uniform Pressure and Flow

*...from start
to finish of
cylinder discharge*

AIRCO TWO-STAGE

PRESSURE REGULATORS

Airco Two-Stage Pressure Regulators for use with oxygen, acetylene, hydrogen, or nitrogen require but one adjustment . . . the first. Once set at the correct operating pressure, they deliver a constant, non-fluctuating flow of gas from start to finish of cylinder discharge. Drops in cylinder pressure are automatically compensated for, thus enabling the operator to devote his full attention and skill to the job at all times.

But this is only part of the story of what Airco Two-Stage Regulators can do for you. For full details write for Folder ADC-626. To obtain this folder or information on the complete line of Airco regulators, including units for pipe-line and laboratory service, address: Air Reduction, General Offices, 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, Houston 1, Texas. Represented Internationally by Airco Export Corporation.



AIR REDUCTION

Offices in All Principal Cities

Dealers who look to the Future favor the **UNITED MOTORS FRANCHISE**

You can't miss with a United Motors franchise! United Motors lines are original equipment on the majority of old cars now on the road . . . and on the majority of new cars now being built. Thus—for today and for tomorrow—a United Motors franchise brings you the largest *pre-sold* parts and service market in America!

And in the future, United Motors will continue to provide complete, hot-off-the-press service information, tested sales and merchandising programs, and all the other services that help keep United Motors dealers in the front rank of the automotive service business.

If you want to build a sound and prosperous business future, join the thousands of farsighted dealers who are enjoying the many advantages of a United Motors franchise. See your nearby United Motors distributor or write us direct.

A UNITED MOTORS FRANCHISE Gives You These Advantages

UP-TO-THE-MINUTE SERVICE INFORMATION—easy to use; speeds your work.

ORIGINAL-EQUIPMENT PARTS—leading lines of leading manufacturers.

NATIONALLY KNOWN LINES—respected and accepted everywhere.

TIMELY SALES PROGRAMS—individually planned.

MERCHANDISING ADVICE—based on long experience.

WAREHOUSE BACKING—saves time, broadens inventory availability.

COMPLETE PARTS LINES—parts for old cars and new.

UNITED MOTORS SIGN—business-boosting identification.



UNITED MOTORS SERVICE

DIVISION OF GENERAL MOTORS CORPORATION • GENERAL MOTORS BUILDING, DETROIT 2, MICHIGAN

DELCO Batteries

AC Fuel Pumps, Gauges
and Speedometers

INLITE Brake Lining

DELCO Radio Parts

HYATT Roller Bearings

DELCO Auto Radios

HARRISON Heaters

DELCO Home Radios

NEW DEPARTURE Ball
Bearings

HARRISON Thermostats

DELCO Shock Absorbers

GUIDE Lamps

DELCO-REMY Starting,
Lighting and Ignition

KLAXON Horns

HARRISON Radiators

DELCO Hydraulic Brakes

Low-Priced Cars

(Continued from page 80)

tioned is the possible extension of such a model to the foreign field, where lighter weight and lower horsepower are in vogue. Economy of operation, which would be a natural corollary of these two factors, should be an inviting prospect to both foreign and domestic users.

Both Ford and Chevrolet have previously attempted to lower the cost of their cars in a limited way

by offering a smaller stripped down version of a regular model. Back in the early thirties Chevrolet introduced a Standard model which sold for something more than \$100 under the Master line. It had a five-inch shorter wheelbase, 20 less hp., slightly smaller tires and was generally less well appointed. The experience could not be called a success and the model was abandoned. Ford introduced the 60 hp. model in the 1937 model year. This car weighed about 200 lb. less than the

regular model, had smaller tires, developed 25 less hp., and sold at a price differential of \$31 under the regular Ford line. It also was not particularly successful. No one is quite sure about just why these cars did not succeed. The general opinion, however, is that even though they were cheaper, the price of the regular models was not high enough to make the differential attractive. Another idea among analysts now is that a cheapened version of a regular model constitutes a mental hazard in the mind of the buyer, and that a completely new design selling for the same price as a stripped-down model would not meet such a psychological barrier.

Ford and Chevrolet are the only two major companies to announce plans for a definite lightweight, low-cost automobile. Chevrolet has established a Light Car Division under the jurisdiction of Nicholas Dreystadt, general manager of Chevrolet. The car will be sold through the regular Chevrolet sales organization.

Ford also has formed a special division for manufacture of a lightweight car. It is understood that sales will be made through Ford dealers. Henry Ford II, said a few weeks ago that the new car would be presented to the public following introduction of the regular line of postwar Fords, sometime after next January.

Willys-Overland Motors Inc., long a proponent of a small, lightweight, economical car, also will be in the field sometime next year. The company has under development an improved version of its prewar model. Details have not yet been announced, but it is known to have a six-cylinder engine and other improvements. A new entry into the field is the Bobbi-Car, which like the Crosley, is not a full size automobile. It has an 80-in. wheelbase, 42-in. tread, four-cylinder engine of 21 hp., and overall length of 132 in. However, it is the offering by the major manufacturers of full-size lower-priced cars that is of paramount interest. The volume potential of an acceptable automobile in reach of millions of families would have a significant influence on the future of the industry.

BUNDYFLEX RIGID METAL HYDRAULIC BRAKE LINES

Original Equipment on Every Car and Truck
Made in the United States in Recent Years

ATTRACTIVE METAL SIGN AND
RACK FREE WITH EACH ASSORTMENT

90% OF ALL
REPLACEMENTS

of Rigid Metal Brake Lines
can be made from this

NEW No. 475 FAST SELLING
DEALERS DISPLAY ASSORTMENT

No more uncertainty and extra work on rigid brake line replacement jobs, thanks to BUNDYFLEX ready-to-install lines. No more hunting for right tubing or fittings; no more tube cutting or flaring. It's easier and faster to duplicate the original installation from this assortment. Contains 4 each of 6 popular numbers that fit 90% of all cars, trucks, buses, tractors, etc. Complete with sign and rack.

Extra long lines
easily made with
EVERHOT 300C 1/4F x
1/4F inverted flare
union.

LIST PRICE
EACH \$1480

DEALER PRICE
EACH \$985

ORDER FROM YOUR JOBBER TODAY

EVERHOT PRODUCTS CO.

2055-59 W. CARROLL AVE., CHICAGO 12, ILLINOIS
1511 W. SEVENTH ST., LOS ANGELES 14, CALIFORNIA

PUZZLE:

How Can You Get Under the Hood--
to Make Those EXTRA Sales?

ANSWER:

By Asking Every Motorist:
"How's Your Oil Filter?"



UNDER THE HOOD is where you make EXTRA sales—oil, fan belts, spark plugs, and Fram Filcron filters and cartridges! So DON'T ask your gas customers, "Check your oil?" That's just asking them to say "No!" Instead, say "How's Your Oil Filter?" Three out of five will admit they don't know—and that's your cue to find out!

OPEN THE HOOD and make the Fram Dipstick Test. If oil shows dirty, install a new Fram replacement cartridge in the filter to keep oil physically, visually clean.* If the car is not oil filter equipped—show the motorist how dirty his oil is, explain how a complete Fram Filcron filter protects his motor, install one on the spot!

FRAM FILCRON is the amazing new oil filter that makes possible "micronic filtration," the trapping of abrasive particles as small as one micron (.000039 of an inch) in size. It saves the motorist breakdowns, trouble, repairs, money. And it gives YOU more cash in the register! **FRAM CORPORATION**, Providence 16, R. I. **In Canada: J. C. Adams Co., Ltd., Toronto.**

*Certain heavy-duty oils, due to the detergent additive used, will turn dark in color as soon as put into the engine. Where such oils are used, filter cartridges must be changed on a mileage basis.

FRAM Filcron Filter

THE MODERN OIL & MOTOR CLEANER



You Wouldn't Put a
Corroded Battery Cable
on a New Battery



PURITANIZE*

When hydraulic brake fluid is old and over worked, bringing it up to level with a shot of Puritan all-“miscible” brake fluid will help for a time, but what the system really needs is a thorough cleaning out of the old, and a refill with new brake fluid.

That's what a Puritanize* job does and does quickly and easily with more profit for you.

Puritan Hydraulic Brake Flush-

ing Fluid is engineered to do a thorough cleaning job of brake line —fast and efficiently. And Puritan Hydraulic Brake Fluid, the only all-“miscible” non-gumming type, gives long service under all conditions.

Increase the revenue on your brake service by selling Puritanize* jobs. Get a supply of Puritan Hydraulic Brake Flushing Fluid and Puritan Hydraulic Brake Fluid from your NAPA jobber now.

*PURITANIZE...TO BRAKE SAFETY

1 Clean out the hydraulic brake line with fast-acting Puritan Hydraulic Brake Flushing Fluid.

2 Refill with non-gumming all-“miscible” Puritan Hydraulic Brake Fluid.



PURITAN COMPANY, INC.
ROCHESTER 6, NEW YORK

AAC Hot Springs Meeting Completed

(Continued from page 41)

a large part of the program.

Probably the outstanding subject of the three-day program was concerned with the forthcoming Guide Book to More Profitable Customer Meetings as they are conducted by automotive wholesalers. This guide book, soon to be published for distribution to automotive wholesalers, is under the direction of an AAC task force assigned to this job, headed by Walter Kirkpatrick, Wilkening Manufacturing Co.; J. F. Apsey, Black & Decker Manufacturing Co.; Burt Hotvedt, Blackhawk Manufacturing Co., and Russ Conley, Hollingshead Corp.

At the conclusion of the meeting, Gene Robers, sales promotion manager of The Weatherhead Co., and Burt Hotvedt, sales promotion manager of Blackhawk Manufacturing Co., were re-elected, and Edward Todd, advertising manager of The Imperial Brass Mfg. Co., and P. C. Poss, assistant advertising manager of The Timken Roller Bearing Co., were elected to the Board of Governors.

In a unanimous vote all of the present officers were re-elected for the coming year. These included T. Faxon Hall, Walker Mfg. Co., president; Walter A. Kirkpatrick, Wilkening Mfg. Co., vice-president; Charles H. LeFevre, Sealed Power Corp., secretary; and George W. Stout, of Perfect Circle, treasurer.



Year after year—
CHEVROLET AND CHEVROLET DEALERS
become firmer and firmer friends



... because, year after year, it becomes increasingly plain that Chevrolet's advanced factory-dealer policies are and will remain the friendliest and most profitable factory-dealer policies in the automotive industry. Year after year it becomes increasingly plain that when you have the Chevrolet franchise you have friends.

CHEVROLET MOTOR DIVISION, General Motors Corporation
DETROIT 2, MICHIGAN

Going Forward Together



You and
CHEVROLET

Motorola

present



"IT GIVES CONSTANT HEAT
AT THE TEMPERATURE YOU
CHOOSE."



"IT HEATS WHEN YOUR
MOTOR IS OFF!!"



"TWO MODELS—
FOR COWL OR UNDER SEAT."

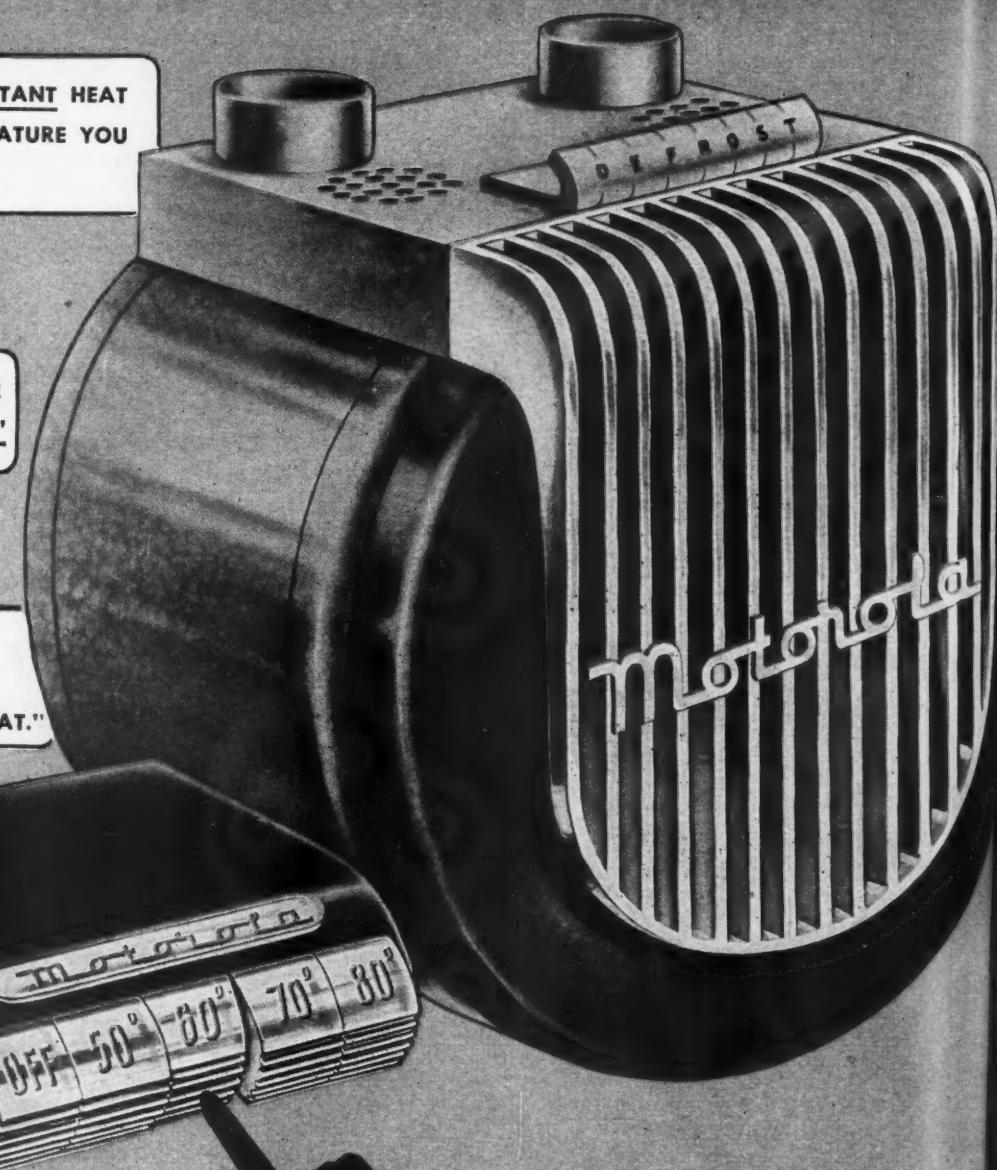


"ONE IN MY CAB AND ONE
IN MY TRAILER KEEP ME
AND MY CARGO WARM."



"STARTS IN 33
SECONDS AT 50°
BELOW ZERO."

Automatic
PUSH BUTTON
HEAT SELECTOR."



Seven years and over one million
dollars were spent on research and
development in the perfection
of this FINEST OF ALL CAR HEATERS.

GASOLINE FIRST CAR HEATER...

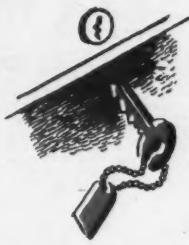
with these 5 NEW POSTWAR
Revolutionary FEATURES

1. Automatic PUSH BUTTON HEAT SELECTOR



Take your choice of temperatures—50, 60, 70 or 80 degrees—press a button, and in a few seconds your Motorola Heater will begin building up heat to that specific temperature.

4. HEATS WHEN YOUR MOTOR IS OFF!



The Motorola Heater operates independently of your car engine and fuel pump. This is a mighty important feature when you leave your car for a while, but want to return to a WARM car. Can be installed in all cars including those with automatic transmission.

2. CONSTANT HEAT!



Like the automatic heat in your home, it's THERMOSTAT CONTROLLED! You get constant, unchanging heat. Your Motorola Heater develops heat rapidly when you press the button, until the temperature is built up to the desired degree. Then the heat levels off to keep the temperature there. It's completely automatic! It's constant!

5. TREMENDOUS HEAT GENERATING POWER



Within just 60 seconds from the time you turn it on, your Motorola Heater develops 18,000 BTU's! That's enough heat to keep two average rooms comfortably WARM.

3. FAST HEAT!



STARTS IN 33 SECONDS AT 50° BELOW ZERO

No need to wait until your motor gets warm—the Motorola Heater begins to develop heat immediately. Even at temperatures as low as 50° BELOW ZERO the sensational new Motorola Heater starts within 33 SECONDS! Ideal warmth on short trips.

GALVIN MFG. CORPORATION
CHICAGO 51, ILLINOIS

IT'S THE *Finest*
BECAUSE IT'S A
Motorola
• IT WILL SELL ON DEMONSTRATION
• CASH IN NOW—BE AMONG THE
FIRST TO FEATURE IT
• SEE YOUR MOTOROLA DISTRIBUTOR
FOR THE EXCITING DETAILS

Some Women Can Drive

(Continued from page 40)

she swerved to miss a drunken hit-run driver.

She felt bad about that, particularly since the Northrop maintenance department didn't think it was serious enough to warrant "bumping out" the fender and re-touching.

Dolores doesn't like people who

say women are poor drivers.

"Most women don't drive enough to keep in practice," she insisted. "They get the car about once a week, and then drive in heavy traffic to do their shopping and other errands. They have lots of chances to have accidents that way."

"But if women drove as much as men you wouldn't be able to tell the difference. Women would be every bit as good drivers as men."

"Maybe better," says Dolores Tew.

Nash Appointment

James Molloy has been appointed parts and accessory merchandising manager for Nash Motors, H. C. Doss, vice-president and general sales manager, announces.

Molloy, previously, was Nash Canadian parts and service representative. He was with Chrysler Corp. of Canada, Ltd., from 1938 to 1945. Previous, he was associated with the B. F. Goodrich Rubber Co.

Elected Vice-President

Robert Safford was recently elected vice-president of the Wayne Pump Co. He was formerly manager of the Wayne Houston-San Antonio division, and has been with the organization for more than 15 years. Safford's former position was assistant to the president.

Glidden Tour

(Continued from page 40)

last Glidden Tour took place, will leave in large groups from New England, New York and Pennsylvania in time to assemble at Albany on Saturday night, Aug. 17. Other cars will join the tour enroute. The schedule:

Aug. 18—Albany to Syracuse, N. Y.

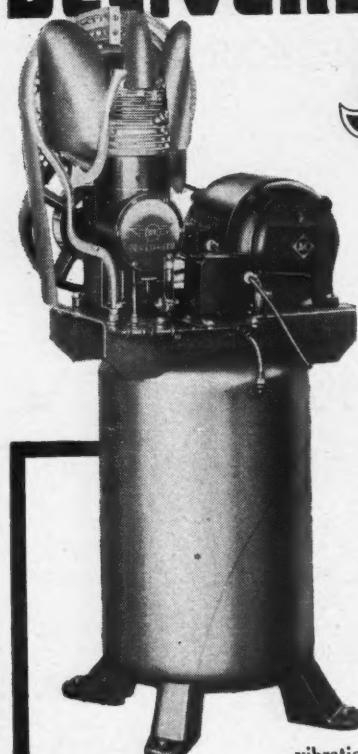
Aug. 19—Syracuse to Rochester.

Aug. 20—Rochester to Buffalo, where cars and passengers will proceed by boat to Detroit.

The Glidden Tours were named in honor of James J. Glidden of Boston, himself a world-wide tourist, who presented a trophy to the AAA for the annual tour. The competition was intense because the Glidden trophy was the most coveted touring prize among early motorists.

Although most cars being entered in this year's competition are of American manufacture, some cars of foreign manufacture also will participate. None of the cars is a so-called "jalopy." All are in excellent mechanical condition, a credit to their owners, and all conform to highway regulations. The tour has been approved by the highway officials of all states through which it passes. Full cooperation of state and city police is assured.

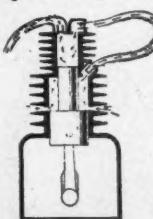
DELIVERS MORE AIR for less money!



Vertical Mounting
Compact—Saves
Space

High and Low Pressure Cylinders on One Center Line

Both high and low-pressure cylinders cast integrally with the two cylinder bores on the same center line—makes the WINDJAMMER simpler, more compact, and less liable to service troubles. The exclusive Doyle valve—of the capsule type—insures quick access for repair or replacement, and holds servicing time to a minimum.



See your Jobber today or
write Dept. MA-7 for Com-
plete Information.

DOYLE * * *
MANUFACTURING CORP.
SYRACUSE, NEW YORK

From the time he puts 'em in 'till
THEY ARE CLEANED, DRIED AND READY
TO COME OUT... 3 minutes....

Putting dirty,
greasy parts in
the degreaser.



10

2



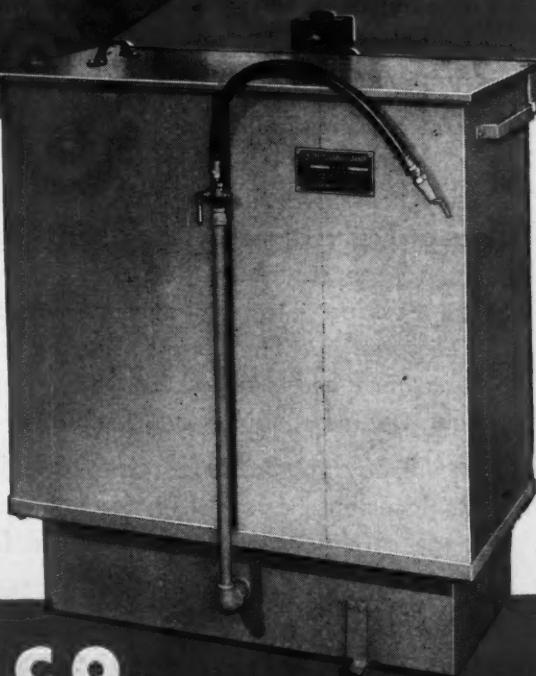
Removing clean,
dry parts in 3
minutes.

4

Circo Chief

DEGREASER

In parts cleaning as well as in repair work "time consumed" is item number one in importance. ♦ That is one of the reasons why the Circo "Chief" degreaser with its amazing three minute hot vapor cleaning method is the talk of the repair shops. When the "Chief" goes into action it cleans thoroughly and extremely fast, starts and stops automatically, controls the heat automatically, thoroughly cleans and dries dirty parts automatically. In vapor degreasing the hot vapors of solvent condense on the cold parts, dissolving oil and grease. ♦ The "Chief" cleans parts five different ways: hot vapor cleaning (automatic) drying (automatic) spraying (automatic) soaking and dipping. ♦ There's a Circo cleaning unit to fit your particular requirements. Drop us a line and one of our representatives will call and show you what a Circo degreasing unit can do for you.



CIRCO Products CO.

2835 CHESTER AVENUE • CLEVELAND 14, OHIO

Correction in Shop Manual Listing

Due to a printer's error, *Motor's Factory Flat Rate and Shop Manual* was not included among the list of manuals which had been approved by OPA in an article which appeared in the June issue of *MOTOR AGE*.

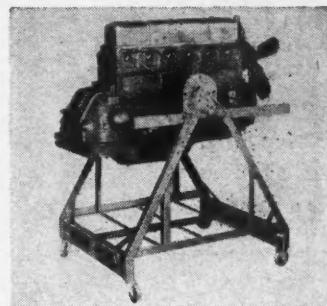
This unfortunate error is very much regretted and *MOTOR AGE* is glad to correct this mistake. In ad-

dition to the *Motor Factory Flat Rate and Shop Manual* and the *Motor Age Flat Rate and Service Manual* (called the Chilton in the OPA release), the *General Motors' Sectional Panel Flat Rate Supplement* is also approved.

Due to the extreme popularity of the *Motor Age Manual*, supply of the 1946 edition was exhausted several months ago, and orders for the 1947 edition are now being accepted.

Advertisement

This Engine Stand is a Money-Maker and Time-Saver in Any Size Shop



UNIVERSAL MODEL 201
For all in-line Automotive
Engines up to 600 lbs. weight.

Designed to handle all in-line automotive engines to approximately 600 lbs. weight, this new Clayborne Universal Engine Stand, Model 201, makes possible production line efficiency in every shop, no matter how small . . . increases production and lowers cost on every operation, eliminating handling of motor block during re-building.

Entire block can be revolved for complete accessibility at all times for grinding seats, cutting valve clearance, etc. All parts can be replaced on motor ready to return to the chassis. It is sturdily constructed, completely mobile, safe and easy to operate. Block may be steam cleaned on stand.

Completely illustrated and descriptive literature on Automotive Overhaul Stands, also Aircraft Engine Stands, is now available. Also on large stands for heavy bus, truck and tractor engines. Address your request to: Clayborne Manufacturing Co., Dept. "D," 209 South La Salle Street, Chicago 4, Illinois.



Always in Demand . . . Demanded More and More

There, in a nutshell, you have two reasons why the Bulldog line spells "Quick Turnover" and a steady, profitable sales volume for you.

Our entire manufacturing effort is concentrated on the production of those replacement parts most frequently needed for the servicing of the most widely distributed cars and trucks. Bulldog parts are always in demand by the great majority of automotive service shops, everywhere!

And Bulldog Replacement Parts are being demanded more and more insistently by those service shops because they have discovered that all Bulldog parts are accurately interchangeable with original parts. They have found, too, that Bulldog quality is "tops". For example, all Bulldog king pin sets are made from "Strain Tempered" or "Stressproof" steel which is superior to case-hardened steel where high tensile strength and long-wearing qualities are needed.

It will pay you to concentrate on Bulldog Automotive Replacement Parts. Write for your copy of our 100-page catalog and Dealers' Price List. Dept. MA-7.



Only NUGGET Socket Wrenches have the DOUBLE-DUTY DRIVE

Successor to both $\frac{3}{8}$ " and $\frac{1}{2}$ " Drives



NECESSITY created $\frac{1}{2}$ " and $\frac{3}{8}$ " drive wrenches — small wrenches for tight spots, strong wrenches for heavy pulls. But NUGGETS meet both of these demands with ONE DOUBLE-DUTY DRIVE. HEXITE, Blackhawk's exclusive steel (70% stronger than chrome vanadium), makes it possible for NUGGETS to be light and small for tight work, but have the guts to take it on heavy pulls. Hexite steel will become available again — and Nugget sets should be arriving in the stocks of Blackhawk jobbers by summer's end. Then you can eliminate costly duplication of sockets, handles and attachments and use NUGGET Socket Wrenches for a complete range of work.

A Product of BLACKHAWK MFG. COMPANY, Dept. W676, Milwaukee 1, Wisconsin

BLACKHAWK
NUGGET*
SOCKET WRENCHES

*Reg. U. S. Pat. Off.

TO PRESENT NUGGET OWNERS: If you have lost any of your prewar NUGGET Wrenches, see your Blackhawk Jobber. He will arrange delivery of the replacements. Blackhawk wishes to protect the investment of present owners, even though Nuggets cannot be made and sold on a mass scale to new buyers until Hexite steel is again available.

HOW TO SOLVE A PROFIT PROBLEM



The **RIGHT** Rapid Battery Charging Equipment Pays Up to 100% Net Profit!

Modern rapid battery charging and analyzing builds business and makes money many ways by—

- earning enough to pay a profit on the equipment itself *plus* creating sales of other services and accessories,
- quickly detecting worn out batteries ready for replacement,
- providing the *first* opportunity for new battery sales,
- eliminating troublesome, time-wasting old equipment,
- furnishing customers a necessary service often neglected.

The Hartman HR-53-2 Rapid Battery Charger and Analyzer, already a proven money-maker for thousands of shops and stations, can help you solve *your* profit problem. Developed by the originator of rapid battery charging, the Hartman HR-53-2 offers low first cost, minimum operation and maintenance cost, as well as many years of dependable, trouble-free service. *Immediate Delivery!*



THE HARTMAN HR-53-2 OFFERS:
Cooler 100-ampere heavy-duty, self-healing rectifier • individual cell-test meters • single-unit precision adjustment multi-circuit tap switch • cast bronze, insulated, current-saving battery clamps • heavy duty 20Q-ampere cell test and desulphation discharge unit • massive, waist-high, beautifully designed, space-saving cabinet • swivel brake caster and heavy rubber tires.

Ask Your Jobber for
Details and Catalog



Clearing House

(Continued from page 44)

settles to the bottom of the tank. If that fails to overcome your trouble, it is the result of condensation and there is very little you can do about that.

Sometimes you can get the car owner to store the car in a different location where it is not so damp and where the temperature changes are not so extreme. However, I am quite sure you will find that the water is pumped into the tank whenever the gasoline is purchased, in spite of the fact you state you have purchased gasoline from several different sources. It is often helpful to install an additional fuel filter between the fuel pump and the gas line so that the water is separated from the fuel before it reaches the pump.

Joseph C. Dawson



Joseph C. Dawson, widely known auto-racing official and enthusiast, and winner of the 1912 Indianapolis 500-mile Classic, died as a result of a heart attack in Philadelphia, June 17, 1946. He was returning from an inspection trip at Langhorn Speedway when he was stricken.

Former service manager of the Marmon Philadelphia Co., and past president of the Philadelphia Service Association, Mr. Dawson was a manufacturer's agent at the time of his death.

A member of the AAA Contest Board for many years, Mr. Dawson's passing will be mourned by the racing fraternity and the many persons in the automotive industry to whom he was well known.

Thompson Products

General Manager Named

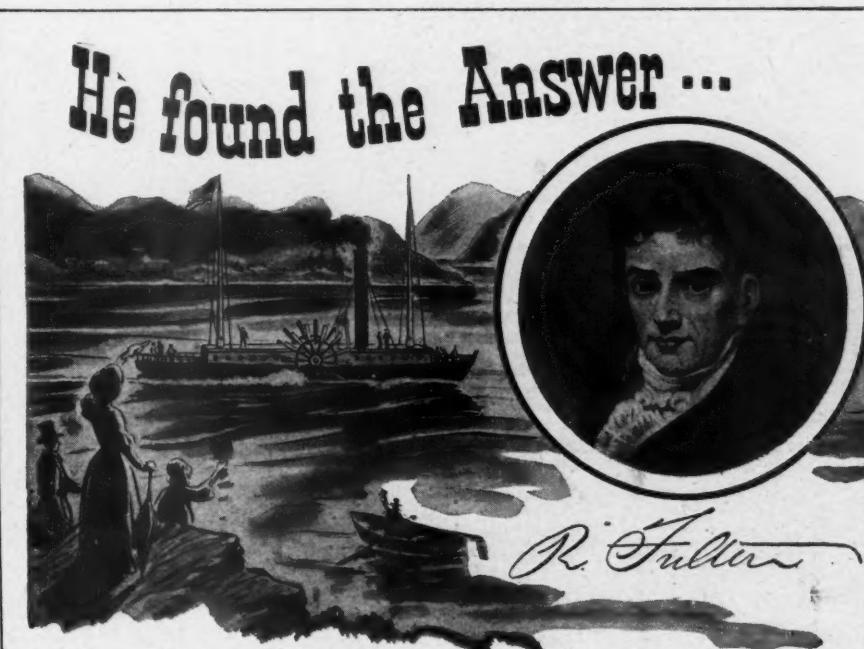
Edwin T. Syvertsen has been named general manager of the service division of Thompson Products, Inc., filling a position recently left vacant by the resignation of Tom O. Duggan, it was announced by Frederick C. Crawford, presi-

dent of the company.

Syvertsen has been with the Cleveland auto and aircraft parts manufacturing concern for twenty-five years, the last ten as sales manager of the division he now heads.

In 1924 when Thompson Products established its service division to enter the automotive maintenance market, Syvertsen became the new division's first sales correspondent. He progressed to junior salesman, Chicago district man-

ager, western sales manager in 1931, and sales manager of his division in 1936. During the ten years he headed sales the yearly volume of Thompson replacement parts rose from \$2,244,000 in 1936 to an estimated \$19,000,000 for this year. The number of wholesale jobbing concerns selling Thompson auto parts in the United States increased from 487 to 2,630 in the same period, and the company's factory branches in key cities from 11 to 24.



The jeers of skeptical spectators quickly turned to cheers as Robert Fulton's Clermont, nicknamed "Fulton's Folly," proudly steamed up the Hudson on her 32-hour maiden trip to Albany.

Profiting by the failures of eight other inventors, Fulton, in 1807, had found the answer to the problem of steam propulsion for boats, making steam navigation practical for the first time.



You will find the answer to your Fuel Pump and Carburetor Repair Problems in
**HYGRADE REPLACEMENT PARTS
IN CONTAIN-ALL KITS**

The up-to-date way of handling these vitally important branches of repair—at a handsome profit to yourself.

**OTHER HYGRADE PRODUCTS
SPEEDOMETER PARTS "SHOCK" PARTS
FUEL LINES AND FITTINGS**

From your jobber

HYGRADE PRODUCTS CO., INC.
35-35 Thirty-fifth St., Long Island City 1, N. Y.



Legally Speaking

A lawyer's interpretation of federal and local court decisions of interest to repairmen and car dealers

Repairman's Testimony

WHEN a repairman reconstructs a car damaged in an accident, the job may include items which were needed before the collision as well as those required as a

result of the accident.

The repairman will do well to note carefully, exactly which parts and repairs were required because of damage due to the accident, and which would have been needed even if there had been no accident.

If the owner of the repaired car sues the driver who caused the accident, he can obtain financial redress only for those repair expenses directly attributable to the collision—and not for those that would have been incurred anyhow.

In many cases the repairman is the only person who knows which items are "accident" items and which are not. That is why he is called as a witness to prove the true amount of the accidental damage. Unless he has carefully checked the job, item by item, he may find the witness chair a most uncomfortable spot. At the very least, he will be made to look like a stupid, unbusinesslike fellow whose word simply cannot be relied upon.

Poor testimony by the repairman may cause his customer to lose the damage reimbursement to which he is legitimately entitled. That definite and accurate testimony by the repairman can be a powerful support to his customer was demonstrated in a recent Louisiana case. There it was argued that the money claimed for repairs did not represent damage due to the accident. The Court brushed aside that contention and said:

"Plaintiff produced the repairman who repaired the car after the collision and he testified that all the items charged for repairs were made necessary by reason of the accident. We see no reason to disagree ____."

(*Honeycutt vs. Carver*, 25 So. 2nd 99.)

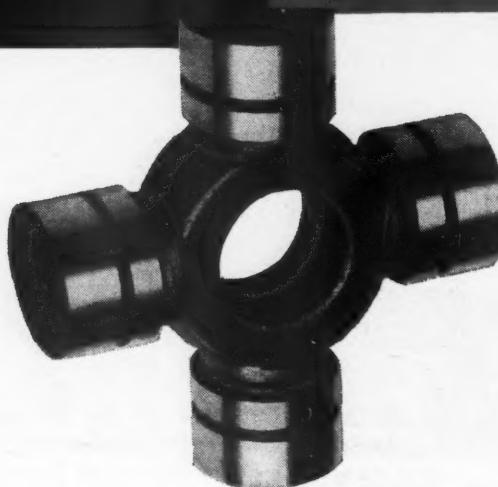
Tricky Contract

ARE oral contracts valid and enforceable?

Ordinarily, they are, but a New York concern recently found to its dismay that although the court was willing to assume that the contract on which it sued had actually been entered into, it was unenforceable because it was not in writing. The odd fact in this situation was that the real reason why this oral contract was not enforceable was that its performance might require more than one year.

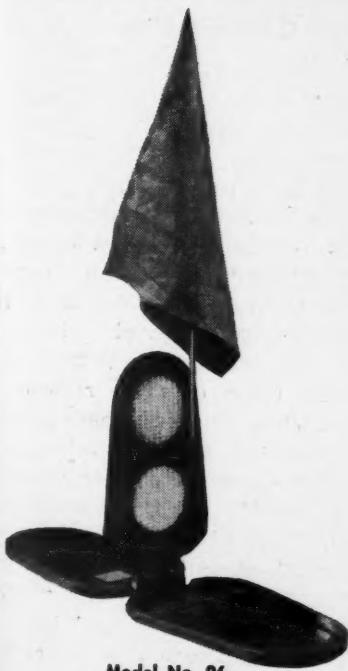
Perhaps that sounds a bit tricky, but in every state there is a law called the Statute of Frauds describing certain kinds of contracts which must be in writing in order to be enforceable. One type of contract which must be in writing in order to be enforceable is an agreement whose performance may possibly require more than one year.

(Continued on page 96)

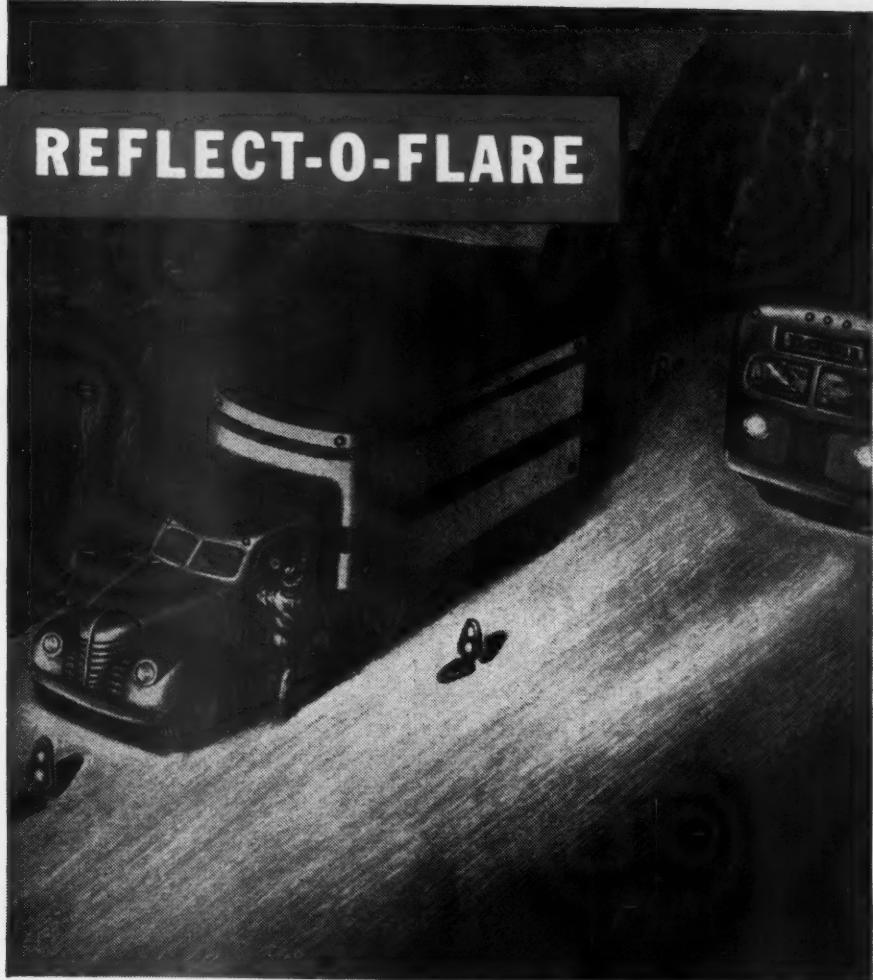


ROCKSTOWN, PA.

THE ARROW REFLECT-O-FLARE



Model No. 96
Shown with flag for daylight use.
Flags are extra.



Model No. 90
Set of 3 flares furnished with
handy carrier for mounting in
vehicle. Can be locked if desired.

SAFETY
ARROW
DEVICES
SAFETY AFTER DARK

Here's the latest development in road signs.
Economical! Dependable! Safe!

Arrow REFLECT-O-FLARES are the modern answer to one of today's highway-safety problems! Arrow REFLECT-O-FLARES are sturdy, durable. Visible at night from distances up to 2500 feet, they assure *positive protection* to driver and vehicle when forced to stop along the highway.

There is no maintenance required when you use Arrow REFLECT-O-FLARES. They are ever-ready and easy to use. For full details, see your jobber salesman or write Arrow Safety Device Company, Mount Holly, New Jersey.



Legally Speaking

(Continued from page 94)

In other words, unless by its terms a contract is definitely to be performed within one year, it is unenforceable unless put into writing. The mere fact that the contract *may possibly require more than one year for its performance* is sufficient to bring it within the statutory rule that it be in writing.

As the court put it in the New York case:

"If we assume that there is an oral contract, the time for its performance is not definitely stated. It is possible that the contract would run for many years and the plaintiff seeks damages for a period of years. Under such conditions the contract would not be valid unless it was in writing." This Federal court decision applied the New York Personal Property Law, which is similar to the Statute of Frauds in other states. (Kleble

Corp. vs Jarka Corp., 20 Federal Supplement, 647.)

Safe rule: If there is a possibility that the performance of the contract may run for more than a year, make sure that the agreement is put into writing.

Fuel Filter Released For Civilian Use

The same fuel-filter design used by the hundreds of thousands in military automotive equipment, is now being released for civilian duty by Skinner Purifiers, Inc., Detroit 11, Mich. The "Skinner Purifier" cleans gasoline, or other fuel, by passing it between layers of helically wound ribbons made from impervious material. Dirt and other impurities are stopped at the outer edges of these ribbons and fall into the sediment chamber. Accumulations on the outer surface of the element occurring after long use, can be quickly cleaned off by simply blowing compressed air, or even the breath, into the cylinder. The element, named the "Skinner Kwick Klean Kartridge," is said to actually separate free water from gasoline.

Blue Heron Crane

(Continued from page 46)

operator is kept on the opposite side of the load at all times, accidents are prevented, it is stated. Three capacities of Blue Heron Truck Cranes are available; one ton, $\frac{1}{2}$ ton, and 500 lb. The latter can be mounted on a motorcycle sidecar or warehouse truck.

PERFORMANCE
as great as the name

ONLY AN EDISON HAS THIS PATENTED "SPUN-ON" LEAKPROOF GASKET

SEND FOR YOUR COPY OF THE NEW EDISON SPARK PLUG "POWER GUIDE"

Edison SPARK PLUGS

Edison-Splitdorf Corporation, West Orange, N.J.



BARRETT SAYS:

THE BRAKE DOKTER LICKS
TOUGH BRAKE JOBS!

The Brake Dokter centralizes and grinds shoes for 100% drum contact and adjusts for proper clearance any size brake assembly from 7" to 24".

With a Brake Dokter any regular mechanic can easily WHIP 98% OF ALL BRAKE TROUBLES—grabbing, side-pull, hard-pedal, chatter, squeals and diving—IN 1 TO 2 HOURS LESS TIME, and do it better than by any other method.

The Brake Dokter eliminates come-backs for readjustment, creates satisfied customers, saves labor and trouble, increases profits.

The Brake Reliner and grinder has ample power and leverage for defining, relining, countersinking, drilling and grinding any size brake shoe.

The Brake Drum Lathe machines, grinds and hones all types and sizes of car, bus, truck and aircraft drums. Portable for field use, stationary for the shop.

BARRETT EQUIPMENT COMPANY
21st and Cass, St. Louis 6, Mo.

Please send catalog, prices and other information about Barrett Brake Service Equipment.

Company _____

Address _____

City _____ State _____

Signed _____

BARRETT EQUIPMENT CO.

The World's Finest Brake Service Equipment

21st AND CASS • ST. LOUIS 6, MISSOURI

Kaiser-Frazer to Get Steel from New Firm

Cyrus S. Eaton, Cleveland industrialist and one of the nation's leading bankers, announced recently he and a group of associates, including William R. Daley, president of Otis and Co., have organized a new steel company known as the Portsmouth Steel Corp. to acquire the Portsmouth works of the Wheeling Steel Corp. at Portsmouth, Ohio.

In a registration statement filed

with Securities and Exchange Commission, it was revealed that the Portsmouth Steel Corp., which was incorporated on May 23, would issue 1,025,000 shares of common stock to the public at ten dollars (\$10.00) a share.

Eaton also announced that an additional 300,000 shares of the common stock of Portsmouth Steel would be issued. Kaiser-Frazer Corp. has agreed to purchase 200,000 of these shares and Graham

Paige Motors Corp. 100,000 at the public offering price. The new steel company has contracted to provide the two automobile companies with part of their requirements of sheet steel for Kaiser and Frazer cars.

The steel sheets for Kaiser-Frazer and Graham Paige will be rolled for the new steel corporation by Wheeling Steel in Steubenville, Ohio. Under the sales agreement with the motor car manufacturers the steel company will provide them with a substantial portion of their requirements for automobile sheet.

The Portsmouth works covers approximately 190 acres of land and includes a by-product coke plant with an annual capacity of approximately 450,000 tons, a blast furnace with a capacity of about 285,000 tons, 10 open hearth furnaces with a rated capacity of approximately 612,000 tons, mill equipment for producing semi-finished steel, a rod mill with 192,000 capacity, a wire mill and a number of other units including iron, steel and brass foundries.

IT'S TOUGH TO BE TIED DOWN BY MOTOR TROUBLE

Summer's the season for action. Days are longer, weather's clearer, roads are safer . . . it's the best time to drive for profit or pleasure. But, it's also the time to anticipate faulty lubrication and recommend the use of MARVEL MYSTERY OIL for uninterrupted, smooth performance all summer.

Hot weather's greatest threat to motors is excess internal wear. MARVEL MYSTERY OIL stands guard TWO WAYS. First, added to the crankcase, MARVEL MYSTERY OIL REINFORCES every oil to toughen film strength at high temperatures . . . sizzling cylinder tops, valves and guides retain a viscous armor against viscous wear.

Second, added to gasoline and motor oil, MARVEL MYSTERY OIL DISSOLVES gum and varnish that mire engine interiors. Valves and rings shed their sticky coats . . . pump screens, oil and fuel lines are purged and kept unclogged. All vital parts are lubricated and cleaned for action. There's remarkable gain in pick-up, pep and power!

Continuous demand in this season for MARVEL MYSTERY OIL reflects the steady efficiency of this famous additive. Get in the summer sales and service picture . . . order from your jobber TODAY! Emerol Mfg. Co., Inc., 242 W. 69th St., N. Y. 23, N. Y.

MARVEL MYSTERY OIL



When writing to advertisers please mention Motor Age

DeVilbiss Spray Painting School Courses

DeVilbiss Spray Painting School Courses

The DeVilbiss Co., Toledo, Ohio, has reserved three one-week courses in the second half of its 1946 School of Spray Painting for auto refinishers. Starting dates will be August 12, October 14th and December 9th, with all sessions covering the same classroom instruction and shop work. Courses are free to users of DeVilbiss Spray Equipment, who are requested to write for reservations well in advance.

Lincoln Engineering Co. Increasing Facilities

The Lincoln Engineering Co., St. Louis, is expanding production facilities with its new addition now under construction. This addition, which is the third in ten years, adds 20% to the floor space and provides for enlarged engineering and production facilities. Completion by midsummer will give relief to the company's expanded demand for lubricating equipment and allied products.

PERFORMANCE *based on* QUALITY



WILLARD BATTERIES—Automobile • Truck and Bus • Radio • Motorcycle • Tractor Aircraft • Marine • Diesel • Stationary Sold and serviced by Willard Dealers everywhere.

Willard
"SAFETY-FILL" BATTERIES

Dependability • Performance • Long Life

WILLARD STORAGE BATTERY CO. • CLEVELAND • LOS ANGELES • DALLAS • TORONTO

Postwar Version of Indian Cycle Announced

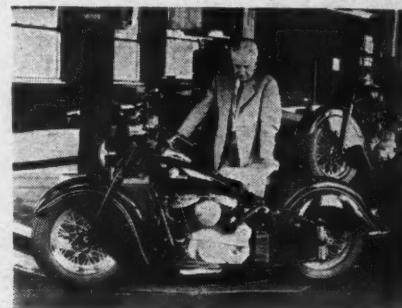
Development of the postwar version of the Indian motorcycle, which includes a number of new and important features, was announced recently by Walter A. Parrish, vice-president and general manager of Indian Motocycle (cq) Co., Springfield, Mass.

"Improvements in the new Indian Chief developed by our company engineers will result in

smoothness and comfort new to motorcycling," Parrish said.

He listed some of the improvements in the new 74 cu. in. model, which will be available with either battery or magneto ignition, as follows: a new front fork of Indian truss design with dual soft-action coil springs, hydraulic shock absorber controlled; streamlined fenders, rubber mounted handlebars, built-in steering damper, new seat post springing, new wheels and hubs, water shielded air-cooled

brake drums, greater brake lining area, new "rotary contact" ignition, light switch, and new horn mount.



Paint jobs are black, Indian red, or Police silver, with chromium trimmings. Production of the Indian Chief already has started. The rate of production will depend upon the availability of materials, Parrish said.

Carter Fuel Pump

The Carter Carburetor Corp., St. Louis, Mo., has announced a new fuel pump known as the Carter Electric Pusher Pump. The pump is designed for installation in the gasoline tank and is a motor-driven centrifugal type pump without valves. The fuel flowing through the pump acts as a lubricant as well as a coolant. The fuel is under pressure from the tank to the carburetor which is said to minimize vapor lock. There are no valves located between the pump and the carburetor which allows fuel to drain back from the carburetor to the tank when the engine is stopped. This feature is said to eliminate a pressure build-up and consequent hard starting with a hot engine. The centrifugal type pump provides a steady non-pulsating flow of fuel to the carburetor.

Installation of the pump may be made in any tank and the pumps are supplied in both 6- and 12-volt units.

A.A.M.A. Show

Strauss, Davies & DeWindt, Philadelphia advertising agency, have been appointed to handle the promotion for the Automotive Accessories Manufacturers Association Show.

The A.A.M.A. management, with headquarters in Philadelphia, Pa., have chosen the Atlantic City Convention Hall for this show on Feb. 3, 4, 5 and 6, 1947.

A black and white photograph of a product box for CAMEL Synthetic Tube Patches. The box is rectangular with a lid. The lid features a large, stylized word "NEW" at the top left. Below it, the brand name "CAMEL" is written in a bold, serif font, accompanied by a small illustration of a camel. The text "SYNTHETIC TUBE REPAIR PATCHES" is printed below the camel. The main body of the box has a textured, grid-like pattern. To the left of the box, the text "No. SN-100" is printed. Below the box, a small descriptive text reads: "12 large, round patches for vulcanizing synthetic tubes, 3 inches in diameter."

CAMEL SYNTHETIC TUBE PATCHES

Developed during wartime for vulcanizing synthetic tubes, these large patches are individually wrapped with an extra piece of rubber for reinforcement. The heat element will burn at a hot, even heat that will fully cure the patch. When correctly repaired with this CAMEL Patch, the repair is the newest part of the tube and will give satisfactory service. This new patch will also repair natural rubber tubes with equal effectiveness. It carries the same absolute guarantee of all CAMEL tube repair materials.

A black and white photograph of a product box for CAMEL Synthetic Tube Patches. The box is rectangular with a lid. The lid features a large, stylized word "NEW" at the top left. Below it, the brand name "CAMEL" is written in a bold, serif font, accompanied by a small illustration of a camel. The text "SYNTHETIC TUBE REPAIR PATCHES" is printed below the camel. The main body of the box has a textured, grid-like pattern. To the left of the box, the text "No. SN-100" is printed. Below the box, a small descriptive text reads: "12 large, round patches for vulcanizing synthetic tubes, 3 inches in diameter."

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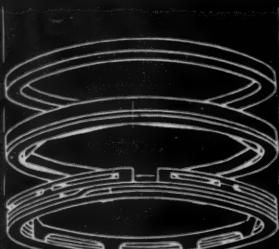
Look for the familiar CAMEL package anywhere!

CAMEL Patches

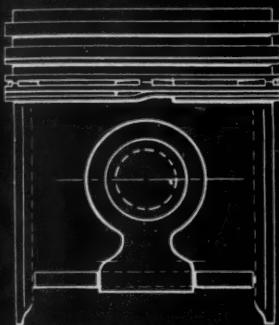
H. B. Egan Manufacturing Company, Muskogee, Oklahoma
In Canada: GEORGE M. WATSON & CO., Ltd., Toronto, 2

Other CAMEL Products available in the complete line are: Quick Cure Gum, Tube Repair Kits, Garage-size Kits, Vulcanizing Cement, Rubber Cement, Tire Patch Cement, Vulcanizing Kits, and Valve Stem Heat Units.

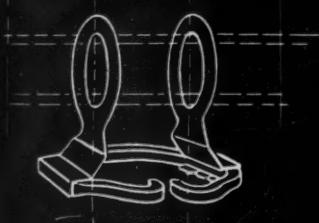
When Pistons Sing, "Ol' Rockin' Chair's Got Me"



RAMCO 10-UP RINGS stabilize the head of the piston, as well as control blow-by air and oil, without excessive pressure, through their Spiro-Seal and Double Lite principle of construction.



RAMCO SKIRT EXPANDERS. When pistons rock and slap, usually the skirt has collapsed away from the wall. Then rings wear barrel-faced, and blow-by and oil waste follow. Ramco Skirt Expanders restore the pistons to their original size and shape so the piston rides true. In stabilizing pistons, they work at the point of collapse, at right angles to the piston pin.



Stabilize the piston... DO THE JOB RIGHT!

Stabilizing the head of the piston is the function of Ramco 10-up rings—stabilizing the skirt is the work of Ramco Piston Expanders. Piston stabilization is fundamental to the Ramco method of Re-Powering. Ramco pioneered it . . . proved it . . . engineered its development. Today, as never before, engines need complete piston stabilization as provided by Ramco

rings and expanders. Recommend and install both on every job; then you can be sure of doing the complete job, and doing the job right! Remember—the jobs you do right win MORE jobs to do! See your Ramco jobber . . . Ramsey Corporation, 3718 Forest Park Blvd., St. Louis, Mo. Factories: St. Louis; Fruitport, Mich.; Toronto, Canada.

RAMCO *10*
up **RE-POWER** *Ring*

THE ALL-PURPOSE RING FOR EVERY JOB...RE-BORE OR RE-RING...10,000 MILE RING AND LABOR WARRANTY

Copyrighted 1946 by Ramsey Corporation
Trademarks Reg. U. S. Pat. Off.



MORE "READY-MADE" CUSTOMERS

SINCE 1932, AC's have been original equipment on more than 2 out of every 4 new cars and trucks. So, the owners of those cars and trucks are already sold on replacing with AC's.

Tie up to that leadership. Become a nationally advertised, "Registered AC Cleaning Station." Stock and sell the plugs that give you more ready-made customers!

SEND FOR AC SHOP MANUALS MA-7

Field Service Dept., AC Spark Plug Div., G. M. Corp.
910 Mott Foundation Building, Flint 3, Michigan

Gentlemen: Please send at once, no charge,
the AC Shop Manuals checked:

- HOW TO SERVICE SPARK PLUGS
- How to Service Oil Filters
- How to Service Fuel Pumps
- How to Service Spark Plug Cleaner
- How to Service Air Cleaners
- How to Service Speedometers
- How to Service Ammeters and other Instruments

NAME _____

FIRM _____

STREET ADDRESS _____

CITY _____ STATE _____

AC SPARK PLUGS

Warner-Patterson Sales Manager Retires

After more than 25 years with Warner-Patterson Co., manufacturers of Warner Cooling System Compounds, H. H. Allyn, sales manager of the firm since 1927, is retiring to his North Carolina farm. "Hos," as he is affectionately known throughout the automotive industry, became associated with the company as assistant sales manager in 1921, and for the past quarter-century has been a key figure in its development of complete automotive cooling system products and service.

Largely as a result of his foresight and vigorous efforts, Warner-Patterson Co. became the first manufacturer of engine cooling system products to recognize the need for emphasizing the close relationship between carburetion, ignition, compression, lubrication and cooling—the five major processes of internal-combustion engines.

As he says goodbye to a long and successful record of active service and retires to a well-earned rest amid the tobacco and cotton of his farm, "Hos" hangs out the latchstring to his many business friends and acquaintances by stating: "Essex, North Carolina, is right on the way to Florida—and I'll always have the makin's of a mint julep or something ready for old friends who are passing by."

General Motors Announces Two Appointments

C. E. Wilson, president of General Motors, recently announced the appointment of Nicholas Dreystadt as general manager of the Chevrolet Motor Division and of John F. Gordon to succeed Dreystadt as general manager of the Cadillac Motor Car Division.

Dreystadt succeeds M. E. Coyle, who was elected an executive vice president of General Motors to devote his efforts to the corporation. Dreystadt first became associated with Cadillac in 1916, when he began a decade of service with the Cadillac branch in Chicago.

In 1932, Dreystadt was ap-

pointed works manager and in June of 1934, became General Manager.

Gordon started with Cadillac in 1923 as a laboratory technician. On August 1, 1929, he became foreman of the experimental laboratory and on August 1, 1933, he was promoted to become motor design engineer. On August 1, 1940, he went over to the Allison Division as a supervisory engineer. Gordon returned to Cadillac as chief engineer on July 1, 1943.

Nozzle Tester Bulletin

Buda's "Universal Diesel Nozzle Tester" is fully described and illustrated in a new four-page bulletin, No. 1238, now available from the Buda Co., Harvey, Ill. A low-cost, portable tool, the nozzle tester requires no technical knowledge and can be used by any mechanic to check spray patterns, test for dribble and leakage, accurately adjust nozzle-opening pressure, and detect troubles common to nozzles and injectors.

The advertisement features a large, stylized, curved text "HONED RACEWAYS" in the upper half. Below it, in smaller text, is "AN EXCLUSIVE HOOVER FEATURE". To the right of the text is "30% MORE LOAD—LONGER LIFE". Below this, there is a large, detailed illustration of a bearing with arrows indicating the direction of rotation. The bottom half of the ad shows three types of bearings: a ball bearing, a roller bearing, and a plain bearing. The text "BALLS - BALL BEARINGS - ROLLER BEARINGS" is positioned between the two rows of bearings. At the bottom, the word "HOOVER" is written in a large, bold, serif font, with "BALL AND BEARING COMPANY, ANN ARBOR, MICHIGAN" in a smaller font below it.

Stewart-Warner Producing Electric Fuel Pump

Stewart Warner is now producing an electric fuel pump readily adapted to passenger-car installation. As announced by the Instrument Division of Stewart-Warner Corp., Chicago, Ill., the new pump is for use on passenger cars as either standard equipment or as an accessory, as well as for use on trucks and buses. Designated Model 110-N, the new pump super-

sedes, and is said to out-perform pre-war Model 110-D. Advantages of the new pump are that it can be serviced in the field without special tools, it has a delivery capacity up to 15 gal. an hour instead of 13 gal. of the previous model and, in operation, is entirely independent of the vehicle engine.

Other features of the new pump are an improved, vibration-proof, enclosed sealed magnetic switch, hydrogen-filled to prevent burning

of contact points; replacement of timers and resistors by a simple, open-blade "trigger" switch in which arcing is minimized by use of a field coil to absorb inductive surge at the moment of contact break, and new non-critical positioning of the switch on a bracket, ready for use and requiring no special adjustment or readjustment during service.

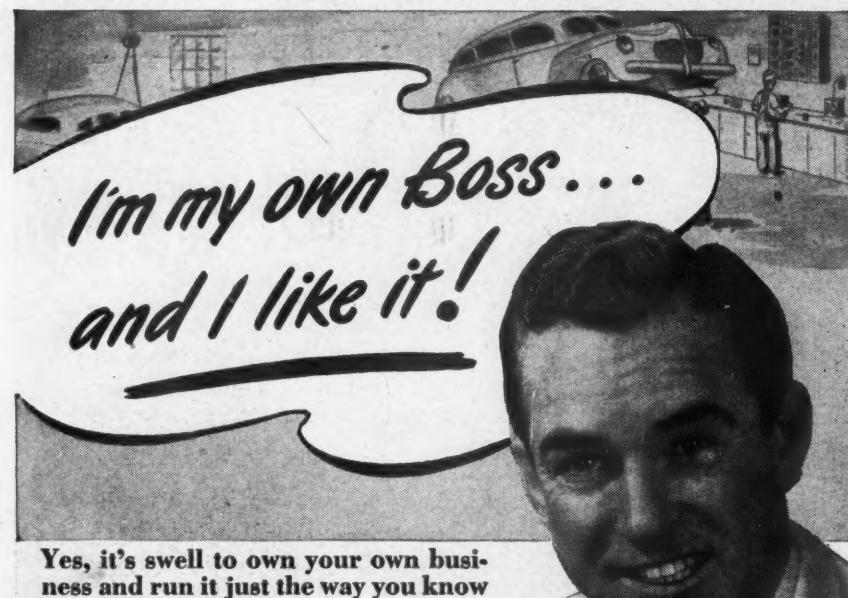
As soon as the engine switch is turned on, Model 110-N pump goes into operation, insuring fuel in the carburetor before the engine is started. The danger of vapor lock is minimized by the pump which operates at either six or 12 volts with low current consumption. The pump operates only when the carburetor needs fuel. When the carburetor needle valve closes and fuel flow stops, back-pressure stops the pump.

New Battery Charger

A new fast battery-charger weighing only 43 lb. light and compact enough for one-handed carry, is announced for automotive, farm, construction, and marine use by Thomas A. Edison, Inc., Kearney, N.J. Using 16-gage die-cast aluminum for the housing, and $\frac{1}{8}$ in. aluminum for the chassis base, the charger has a glass-insulated transformer and a selenium rectifier. Designed to deliver 80 amp. to a 6-volt battery, the new charger operates on 105 to 125-volt, 60 cycle single-phase alternating current.

New Universal Gear Lubricant Described

Texaco announces a new, universal gear lubricant developed to provide increased protection for heavily loaded hypoid gears. The new lubricant is designed to protect gears subjected to high-torque, low-speed conditions encountered on mountainous terrain, and to withstand high-speed shock loading. Claimed to be especially suited to heavy-duty trucks and buses in commercial fleet operation, Texaco Universal is composed of specially compounded soap with sulphur, chlorine, phosphorous, and additives. The product is said to have high stability, is non-foaming, non-channelling, and non-corrosive when subjected to water.



Yes, it's swell to own your own business and run it just the way you know it ought to be run.

You know, better than anyone else, just what your own customers want and need. *And you know where you can get it!*—from your nearby Independent Automotive Wholesaler.

We automotive wholesalers who are members of M.E.W.A. are independent business men just like you are. *We believe in free enterprise*—and our business is to give you a free choice of parts, merchandise and service of unquestioned quality.

You can *count* on your M.E.W.A. wholesaler — an independent business man like yourself—to give you *what you want when you want it.*

Let's do business together!

Your Wholesaler

MEWA

309 W. Jackson Blvd.
Chicago 6, Illinois



SEVEN STEPS to Servicing Success Your MEWA Wholesaler provides:

1. Parts, equipment and supplies you want when you want 'em
2. Precision machine shop service
3. Terms to fit your needs
4. Deliveries to speed your service
5. Freedom of choice of famous brands
6. Prestige of national brands free from tie-in agreements
7. Experienced business, merchandising and mechanical know-how

SPINNING

GLOBE-UNION

POWER



PERFORMANCE counts. Spinning Power Batteries are "tops" for starting that's quick and starting that's easy. Here is assured top quality all the way through, so whatever the requirement, you can count on the toughest jobs being surely and economically done. Globe-Union Batteries have Spinning Power!

GLOBE-UNION INC • Milwaukee 1, Wisconsin

MA-746

Ferguson Elected New Bendix President



Malcolm P. Ferguson of South Bend, Ind., was recently elected president of Bendix Aviation Corp.

to succeed Ernest R. Breech, who has resigned, effective June 30, to become executive vice-president and a director of the Ford Motor Co., it

was announced recently following a meeting of the Bendix board of directors.

Ferguson has been a director and vice-president of Bendix, and group executive in charge of its divisions producing automotive equipment. The new Bendix president has worked for Bendix and Eclipse Machine Co., acquired by Bendix in 1929, all his business life.

In 1919, he joined Eclipse Machine Co. as a field service engineer. He rose to assistant general

manager, and in 1938 was transferred to South Bend as general manager of the Bendix products division of the corporation. He became a vice-president in 1941, group executive the following year and a director in February, 1945.

He is a member of the Society of Automotive Engineers and of the Institute of Aeronautical Sciences.

Advertising Agency Appointment Announced

The American Bank Credit Plan of automobile financing sponsored by the American Installment Credit Corp. of New York has appointed the Wendell P. Colton Co. as its advertising agency, according to an announcement of R. F. Given, vice-president and general manager.

The initial theme of the advertising campaign, scheduled to appear in leading banking and automotive publications, will emphasize the many advantages available to the installment buyer by the purchase of his automobile through his local dealer and local bank.

The local dealer and the local bank, through the American Bank Credit Plan, are now able to offer a complete low cost country-wide service including comprehensive insurance coverage and safe travel protection at home and abroad.

This plan recognizes the local automobile dealer as the most important link in the chain of motor car distribution in contra-distinction to other plans, which in one way or another by-pass the local automobile dealer.

Spark Plug Wall Chart

"Power Guide for Spark Plugs," a wall chart with clear-cut photographs showing hot and cold-firing plugs in the various stages of burning or fouling, and correct-firing plugs in the right heat range, is offered free to mechanics, repairmen, and service-station operators by the Edison-Splitdorf Corporation, West Orange, N. J. Containing clear directions on the cause and remedy of incorrect plugs, the chart includes a recommendation chart of the correct Edison spark plugs for various makes and models of cars, commercial vehicles, tractors, marine and commercial engines.

ANY WAY YOU LOOK AT IT...

Your Acetylene Worries Are Over

YES, if you own a Sight Feed Acetylene Generator your acetylene worries are over.

With a Sight Feed Acetylene Generator:

1. You save 50% to 75% on Acetylene Costs.
2. You don't have to worry about transportation.
3. You have acetylene on hand at all times.
4. You are safer.
5. You won't run out of acetylene in the middle of a job.
6. You can handle any size job as there is a Sight Feed for every need.



THE SIGHT FEED GENERATOR COMPANY
RICHMOND, INDIANA

AIR OR ELECTRIC.....



THOR MULTI-MATIC AIR TOOLS
Seven complete tools are in the Thor Multi-Matic Kit . . .
1/4" and 1/2" Drills, Grinder, Sander, Wire Brush, Polisher
and Hole Saw. Each is available as a unit; any unit can
be converted into other tools with interchangeable attach-
ments. Run from a compressor as small as 3 H.P.



THOR ELECTRIC TOOLS
A wide range of drills, grinders, sanders, polishers,
tappers, holesaws, wire brushes and other Portable
Electric Tools in sizes and capacities for any job are
in the complete Thor Line.

Thor

*Has the **RIGHT** Tools
to Make Money
for **YOUR** Shop*

Between Air-powered and Electric Tools, there is one best choice for you. The right type can increase profits by getting work out faster and, at the same time, save you money in operating and maintenance costs. The conditions in your shop determine the choice . . . and, your Thor Jobber can tell you which type is *your* best bet. He can give you this *unbiased* advice because Thor—and only Thor—makes *both* air and electric tools . . . especially designed for automotive shop service. Whichever you need, for the *right* tool for every job see your nearby Thor Jobber.

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. Jackson Boulevard, Chicago 6, Illinois

Birmingham	Boston	Buffalo	Cleveland	Detroit
Los Angeles	Milwaukee	New York	Philadelphia	Pittsburgh
Salt Lake City	San Francisco		Toronto, Canada	St. Louis
				London, England

... **Thor** **PORTABLE POWER**
TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

Two Out of Six Vehicles Are Defective

Two out of every six vehicles checked during the first three weeks of the Police Traffic Safety Check were found defective.

A total of 924,509 vehicles were checked between May 15 and June 9, according to reports received to date. Of these, 302,892, or 32.8 per cent, were being operated with obvious and dangerous mechanical defects. The figures are based on

partial returns from 40 states, the District of Columbia and nine Canadian Provinces.

In the United States 869,776 vehicles were checked. Of these, 283,623, or 32.6 per cent, were found in defective condition. Canadian police checked 54,733 vehicles of which 19,269, or 35.2 per cent, were defective.

Rear lights, front lights and brakes, in that order, accounted for the largest share of reported failures. Except in a few instances of

reported shortages of automotive parts, these failures are the direct result of driver negligence.

A total of 412,728 defects were found. Totals for each defect and percentages (based on totals of defects listed by type) are as follows:

Defective rear and stop lights	124,069	30.1%
Faulty front lights	80,599	19.5
Inadequate brakes	57,101	13.8
Windshield wipers not operating	38,014	9.2
Horns not operating	35,955	8.7
Unsafe tires	23,359	5.7
All other	53,631	13.0

Other obvious and hazardous defects totaled 53,631 to account for 13.0 per cent of the total.

Appointed Advisor To Nash Advertising Dept.



W. K. Sittman

Appointment of Walter K. Sittman as technical advisor to the advertising department of Nash Motors was announced recently by N. F. Lawler, advertising manager.

Sittman, who has been in the automobile business since 1915, began his career with the Ford Motor Co. as a tool designer. He was a pilot in the Army Air Corps in World War I, rejoining Ford in 1919 as a service traveler.

In 1925 he left Ford to join General Motors as district manager. He joined Nash in 1938 as a service manager and from 1942 to 1945 he aided in promotion of service and accessories at Ross Roy, Inc., Detroit.

Sittman is a native of Pennsylvania.

"Valve Jack" Offered

Prying stubborn valves out of an engine block by primitive methods, too often results in bent valve stems or broken guides. To save time, trouble and temper, Minnesota Automotive, Inc., 1328 Hennepin Avenue, Minneapolis, Minn., has developed the "Valve Jack." Three puller jaws grasp the valve firmly by the head and the position of the fulcrum guarantees a straight pull.

INSTALL A WAYNE

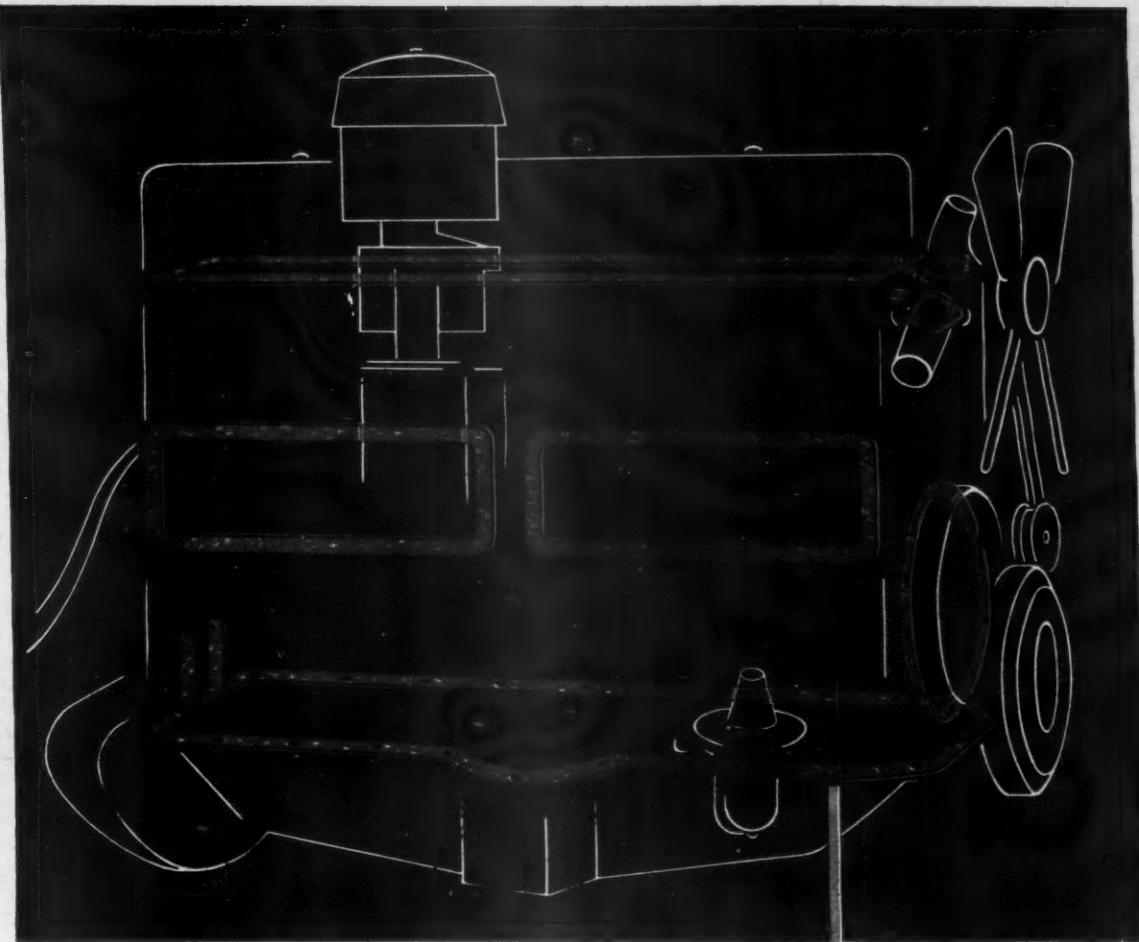
Lively Air saves time and money

You may earn the cost of a new Wayne Compressor in the saving of labor quickly if your old unit is badly worn. No time is wasted waiting for pressure to build up and air is always available instantly. Built in a complete range from $\frac{1}{4}$ H. P. to 10 H. P. . . . backed by Wayne service. Write today for new complete line catalog.

THE WAYNE PUMP CO., FORT WAYNE 4, INDIANA

WAYNE AIR COMPRESSORS

GASOLINE PUMPS • CAR WASHERS • AIR SCALES • REELS • LIFTS



ALWAYS A TIGHT SEAL!

You get an efficient, lasting seal on every job with Armstrong-Victor Cork Gaskets. Made of live, resilient cork, they fill in rough, pitted surfaces . . . so oil can't leak out.

Armstrong-Victor Cork Gaskets speed assembly, too. Bolt holes always line up because shrink and stretch are eliminated by a special binder.

As shown above, these sure-sealing

gaskets are available for all points where cork is used. They are supplied in handy, clearly labeled packages, for all popular makes of cars, trucks, buses, and tractors.

For a complete listing of Armstrong-Victor Cork Gaskets, ask for new Victor Gasket Guide No. 14. Write your jobber or direct to the Victor Manufacturing and Gasket Company, 5750 Roosevelt Road, Chicago 90, Illinois.

LOOK FOR THE TWO-NOTCH TRADE-MARK

Corkolin is a registered trade-mark



Armstrong-VICTOR

CORK GASKETS • CORKOLIN • CORK SHEETS



Texaco Reveals Synthetic Fuels and Lubricants

The Texas Co. supplied a complete line of synthetic fuels and lubricants for the full scale demonstration of synthetic petroleum products staged recently for the Army and Navy at Annapolis, Md., according to Dr. W. E. Kuhn, manager of technical and research division. These new synthetics were used to fuel and lubricate landing craft, amphibious tanks

and experimental gas turbine and turbo-jet engines.

In conjunction with plans just announced by the Navy for a long range study of synthetic fuels to be carried out jointly by the Navy and the oil industry, Dr. Kuhn revealed, for the first time, that the Texas Co. has developed methods for making synthetic gasoline, oils, greases and diesel fuels.

According to Dr. Kuhn synthetic gasoline is made by an improvement on the Fischer-Tropsch

process. Synthetic gasoline of high octane rating, high cetane diesel fuel and jet fuels can be produced by burning methane—the principal element in natural gas—in an atmosphere of pure oxygen. From this, two gases, carbon monoxide and hydrogen, are obtained which are the building blocks for the synthetic products.

Dr. Kuhn stated that the synthetic lubricating oil supplied for the Navy demonstration was prepared by blending equal portions of a synthetic lubricating oil of the ester type with a highly refined mineral oil. The mineral oil is used to supply "body" to the ester and to "wet" the metal of the engine parts.

The synthetic grease demonstrates a wider range of operating temperatures. It is particularly suited for aircraft use in that it will operate satisfactorily between a subzero temperature of -65° and a high temperature of 250° . This grease is made from 20 per cent soap and a special synthetic oil.

Sale Identification

Now in preparation by the parts and service division of The Electric Auto-Lite Co. is a new point of sale identification catalog for all authorized outlets, it has been announced by John A. Shank, manager.

The catalog will offer new window trim, decals, metal signs and neon lighted outdoor signs. The new point of sale identification material will be rushed to completion as soon as possible Shank stated.

Appointment Announced

Neill S. Brown, a veteran of 26 years with the Ford Motor Co., has been appointed general superintendent of the Lincoln Division, T. W. Skinner, Lincoln-Mercury general manager, announced recently.

Brown has served as superintendent of the company's Chester, Pa., assembly plant since 1938. Prior to that time he was superintendent of the Edgewater, N. J., and Chicago branch plants. Brown succeeds J. M. Waggoner, who has been transferred to the Rouge plant of the Ford Motor Co.

"PUTTING THE HEAT ON"

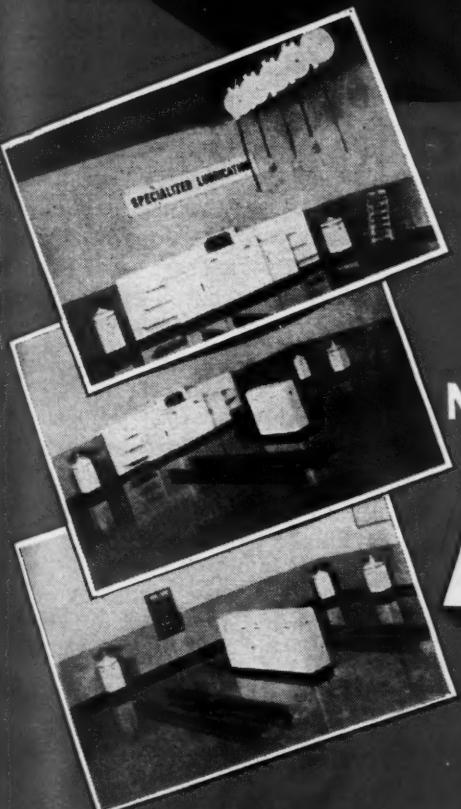
The most modern techniques are employed in heat-treating US Axles. It's this important step that makes them so tough and "puts the heat" on axle failures.

Combine proper heat treating with correct design, best alloy steels, accurate machining, rigid inspections, and you get better-than-ever axle replacements. Get US Axles from your Jobber.

US AXLES

US AXLES MANUFACTURED BY US AXLE CO., INC., POTTSSTOWN, PA.

SAVE TIME
LOWER COSTS
INCREASE PROFIT
BUILD GOODWILL



NEW
ARO CENTER ISLAND
LUBRICATION
UNITS

● Styled for beauty and efficiency, these handsome units tell motorists "Your car will get better care here." You profit, too, by the big saving in time and steps—with all hose centralized and handy for service *on two lifts!*

Unit illustrated has 3 lubricant pumps and 5 automatic reels, including two for chassis, two for gear and one for air. Other units available with any combination of reels for chassis, gear, motor oil, air and water. Automatic stops—automatic rewind. ARO-built precision and dependability. See your Aro Jobber. The Aro Equipment Corporation, Bryan, Ohio.

*Aro will be glad to help you
with layout suggestions.*

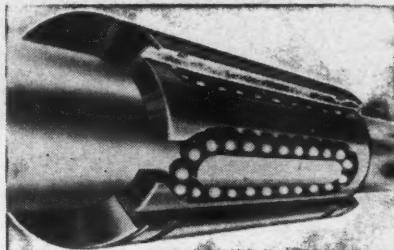
New Anti-Friction Bearing in Production

Thomson Industries, Inc., Long Island City, N. Y., announces the standardization and production of their round shaft type Ball Bushing. Production of this new anti-friction bearing introduces a bearing for linear motions that possesses all the advantages and economies that ball bearings impart to rotary motions.

Plain linear bearings require a large length to diameter ratio to prevent cooking and binding. Free rolling Ball Bushings it is said reduce this dimension requirement and permit design economies. The size, weight and cost of many mechanisms can be scaled down by the application of this new bearing, it is stated.

Ball Bushings also offer the other advantages of ball bearings, such as savings from the use of smaller

drive motors, gears, linkages, etc.; operating economies due to reduced load; long life; increased reliability; less servicing; higher operat-



ing speeds and sustained precision.

Standard Ball Bushing sizes vary from $\frac{1}{4}$ in. shaft size to 4 in. Sizes from $\frac{1}{4}$ in. to 1 in. vary in $\frac{1}{8}$ in. steps; from 1 in. to 3 in. in $\frac{1}{4}$ in. steps and from 3 in. to 4 in. in $\frac{1}{2}$ in. steps. Production of some of the smaller sizes is now under way.

A booklet containing complete engineering information is now available without obligation.



Remember when Apperson advertised "Beauty that Lasts?" Said this manufacturer in 1920: "Today's Apperson owners know there is no such thing as an Apperson going out of style." Yet many drastic changes in motor car styles have come and gone since then. Regardless of the changes time has wrought, today there's an AIRTEX fuel pump that responds to the exact fuel need of every gas-driven car and truck.

AIRTEX Factory Tested FUEL PUMPS

Assembled with AIRTEX Diaphragms, Guaranteed for

All AIRTEX diaphragm assemblies are 100% leakproof. Linkage, valves, rocker arms are carefully made for maximum performance. High pressure castings are warp-proof and uniformly strong and accurate.



"Airy" Tex says:
"Your profits climb with the AIRTEX Line"



AIRTEX AUTOMOTIVE DIVISION
CHEFFORD MASTER MANUFACTURING CO., INC. FAIRFIELD, ILL.

Hydraulic Jacks

A new line of hydraulic jacks built of drop-forged steel, is announced by the Joyce-Gridland Co., Dayton 3, Ohio. Said to eliminate leakage of fluid through porous castings, and breakage, Joyce Liftmaster Nu-Hydro Jacks are fully described in Bulletin 190-J available from the manufacturer.



FIRST IN THE FIELD



BLUE CROWN HUSKY



Controlled Heat Zone SPARK PLUGS

THE ORIGINAL COMPLETE LINE
OF SPARK PLUGS WITH HEAVY
DUTY INSULATORS AND CON-
TROLLED HEAT ZONE

DEALERS EVERYWHERE
MAKE
Bigger Profits
SELLING AMERICA'S
FINEST SPARK PLUGS

Dealers who sell BLUE CROWN "HUSKIES" sell more spark plugs and make more money on each plug sold. The dealer set-up has been carefully worked out to give the dealer a better, fairer profit for his effort in explaining BLUE CROWN superior features and performance to his customers.

- The Massive oversize construction guarantees extra efficiency . . . "HUSKIES" deliver when the going is toughest.
- The Heavy Duty Insulator is bigger and stronger . . . it will not crack "when the heat is on."
- The Heavy Duty electrodes are huskier . . . for longer life with fewer adjustments.
- The Controlled Heat Zone insures uniform operation. It provides a definite path for controlled heat dissipation.

Sold only through Jobbers



DOMESTIC SALES
BLUE CROWN SPARK PLUG CO.
a DIVISION of MOTOR MASTER PRODUCTS CORP.
1800 WINNEMAC AVENUE, CHICAGO 40, ILLINOIS

EXPORT SALES
Borg-Warner International Corp.
CHICAGO 4, ILLINOIS U.S.A.
Cable Address "BORINTCO"

Wholesaling Progress In New Issue of NSPA Book

What automotive wholesalers are doing to improve their business operations is told pictorially by the National Standard Parts Association in a new issue of "Modern Trends," a 16-page booklet which has just been mailed to all of the distributor-manufacturer organization's members.

The first "Modern Trends," published last year, proved highly

popular with NSPA wholesalers as a source of inspiration and guidance in advanced methods. At that time it was announced that other issues would be produced from time to time to assist members in keeping fully abreast of developments in store design and merchandising procedures.

Pictures in the current issue are arranged in five main groups to show good examples of store exhibits of maintenance equipment, buildings and show windows, store

fixtures and floor displays, office layout and equipment, and stock handling facilities.

New Fast Charger

A small, rapid battery charger, is announced by the Hartman Corp. of America, 6417 Manchester, St. Louis 10, Mo. Called the "Super 80," it has an output of 80 amp., weight 80 lb., and has 80 ft. of cable which allows a wide radius of action from any electrical outlet. Features include a heavy duty rectifier; double handles for easy lifting; rubber-tired, 8-in., steel wheels and swivel caster; large, "quick-read," 0-100 ammeter; automatic time switch, and specially designed, heavy-duty, bronze, plier-type, battery clamps with serrated jaws and insulated hand grips.

Designed especially for parking lots, fleet and service shops, filling stations, and public garages, the "Super 80" is said to be light and compact enough to be easily placed in a truck or car and carried to cars stalled at homes, etc.

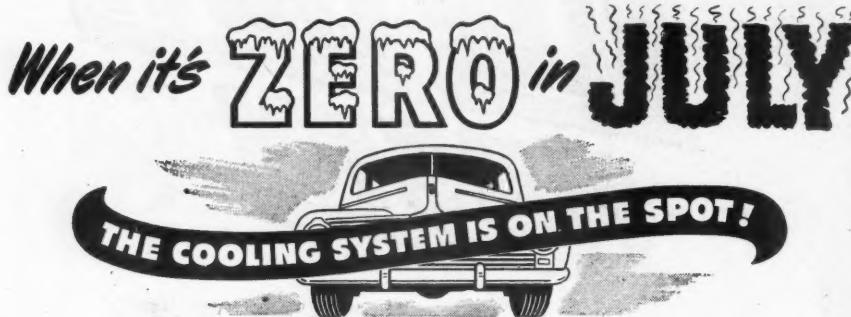
Factory Branch Manager

Bernard Zitter has been appointed manager of the new factory branch and warehouse of the King Quality Products Co. at 1354A Commonwealth Avenue, Boston, Massachusetts. Machine shop service will feature piston finishing, pin fitting, tin plating, and bearing resizing. Stocks of King Quality Products will be carried in the warehouse which will also house the district sales offices of the company. John F. Thurston is district manager of the district.

Fram Appointment

The Fram Corp., Providence, R.I., oil filter manufacturers, have announced the appointment of Harry K. Nagel as their new export manager.

Previous to joining Fram, Mr. Nagel was in the U. S. Army Engineering Corps, where he was one of the officers in charge of army oil filtration experiments and testing. Before joining the Army, Nagel was engaged in export selling in South America and has wide experience in the field.



In even small automobile engines, the amount of heat that must be dissipated by the cooling system is sufficient to heat a six-room house on a zero day! To do its job efficiently, especially in mid-summer heat, the cooling system must be *right*.

Rust, scale, oil muck and grease all help to lower cooling system efficiency to the danger point . . . at which serious engine damage can occur. Safeguard your customers against hot weather engine breakdowns due to cooling system failures—use Warner Products for *complete* cooling system protection.

WARNER RADIATOR CLEANER. Quickly removes rust, scale and oil or grease accumulations which obstruct circulation and lower cooling system efficiency.

WARNER LIQUID SOLDER. Non-metallic—deposits tiny fibers to repair leaks anywhere in cooling system.

WARNER COOLING SYSTEM PROTECTOR. Keeps cooling system clean. Prevents rust and corrosion which lead to general overheating and local "hot-spots."

WARNER SERVICE CLEANER. Prepared especially for trucks and heavy-duty engines. Removes rust, scale, oil muck, grease.

WARNER-PATTERSON COMPANY
920 S. MICHIGAN AVENUE, CHICAGO 5, ILL.

Every "drive-in" is a prospect for Warner Products. Sell 'em all!



STANDARD OF PROTECTION FOR MORE THAN 25 YEARS
Copyright 1946, Warner-Patterson Co.

ONLY ONE WAY TO *Correctly* Tension A STUD OR BOLT



Snap-on TORQOMETERS

insure accuracy — tell
tension as bolt
is tightened...



"GUESSWORK" tensioning on cylinder studs, main bearings, connecting rods and clutch assemblies can cause endless trouble—leaky gaskets, ring failure, binding of bearings, and sticking valves and pistons. The sure way to prevent dangerous distortion is to *know* the tension — to the exact foot-pound—as the bolt is tightened with a Torqometer!

A Snap-on Torqometer is as easy to use as an ordinary wrench. As you tighten the bolt you *watch* the

tension increase on the easily read dial, and stop at the exact tension required... "factory pressure" every time!

Widely used for automotive work is model TQ-150, standard 150 ft. lb. Torqometer, which accepts a $1\frac{1}{2}$ " square drive socket and can be used with extensions and ratchet adaptors. Other sizes from zero to 30 in. lbs., up to 2000 ft. lbs. Write for free copy of Snap-on's car and truck tension chart!

SNAP-ON TOOLS CORPORATION

8036-G 28th AVENUE

KENOSHA, WISCONSIN



Packard Announces New Appointments

Packard appointment of Roy Abernethy as eastern regional manager, and advancements involving three zone managers and one assistant regional manager, were announced recently by vice president and general sales manager, L. W. Slack.

Affiliated with Packard since 1925, Abernethy moves to New York, succeeding Ray W. Cragin,

who recently resigned to take a Packard dealership at Stamford, Conn.

Succeeding Abernethy in the broadened post as Pittsburgh zone manager is C. E. Stube, formerly Chicago zone manager. Stube has been with the Chicago company since 1923.

Stube's successor at Chicago will be E. J. Platfoot, who is transferring from his post as Buffalo zone manager. The new Buffalo zone manager is A. C. Jeffrey, trans-

ferred from Chicago where he has been assistant Midwest regional manager since 1945. W. M. Shields succeeds Jeffrey in Chicago, moving from his post as assistant Cleveland zone manager.

Aluminum Co. to Build New Plant

Thomas D. Jolly, vice-president and chief engineer of Aluminum Co. of America, recently announced the company's plans for the construction of a large new plant near Davenport, Iowa, for the rolling of aluminum sheet and plate. The plant, which is to cost more than \$30,000,000, will have the capacity to produce more than ten million pounds of sheet and plate per month when placed in operation. Construction is scheduled to begin as soon as the project has been approved by the Civilian Production Administration, and completion of the plant will require approximately 18 months.

Approximately 2000 workmen will be employed at the plant when operations get under way.

The plant buildings will enclose 43 acres of floor space under roof, he stated, and equipment to be installed in them will be able to process the largest aluminum ingots manufactured.

"Rayotwist" Cord Being Used in Tire Production

Passenger-car tires size 6.50-16 are now being produced by the Goodyear Tire and Rubber Co., Akron, Ohio, with an especially developed cord known as "Rayotwist," made of rayon filaments. Up to this time, practically all passenger car tires have been made with cotton fabrics. Already used in truck and bus tires for long-distance, high-speed runs, Rayotwist is said to be lighter and stronger than former cords, offers increased resistance to heat generated in high-speed service resulting in improved tread wear, and increases tire mileage due to cooler running.

Rayotwist tires are not being specially identified for the present and are sold at the same prices as comparable Goodyear cotton-fabric tires. Future production will depend on the supply of rayon filament available.

LION
AUTO PARTS

LINE UP WITH LION

LION AUTO PARTS & MFG. CO.
1920 SO. MICHIGAN AVE. CHICAGO 16, ILL.

Look for
the trademark
"TIMKEN"



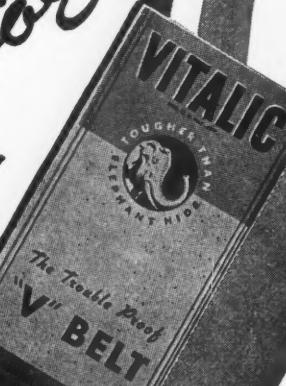
on every
bearing you use

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

VITALIC

fan belts
and
radiator
hose



The EXTRA FACTOR

in Vitalic products is the extra experience of the men who make them. You expect—and get—better, longer service from Vitalic Fan Belts and Radiator Hose because the experience and skill of specialists are built into the products during every step of manufacture. That is why the name Vitalic has been a symbol of dependable service for more than 35 years. Ask your jobber about the Vitalic Line.

SEE OUR CATALOG IN SWEET'S

BRANCHES

Baltimore, Md.	Cleveland, Ohio	Greensboro, N. C.	Lutz, Fla.	Pittsburgh, Pa.
Boston, Mass.	Dallas, Texas	Hartford, Conn.	Memphis, Tenn.	Rochester, N. Y.
Buffalo, N. Y.	Dayton, Ohio	Indianapolis, Ind.	Milwaukee, Wis.	St. Louis, Mo.
Chicago, Ill.	Detroit, Mich.	Kansas City, Mo.	New York, N. Y.	San Francisco, Cal.
Cincinnati, Ohio	Evensville, Ind.	Los Angeles, Cal.	Philadelphia, Pa.	Syracuse, N. Y.



CONTINENTAL RUBBER WORKS
ERIE, PENNSYLVANIA, U. S. A.

Thompson Chemical Co. Purchases Specialties Co.

The Thompson Chemical Co., Pawtucket, Rhode Island, announces that it has purchased the business of the former Thompson Specialties, Inc., of Springfield, Massachusetts. The new company will continue to manufacture the well-known "Tip-Top" line. The new plant of the Thompson Chemical Co. is being set-up to manufacture on a production basis, utilizing modern techniques and equipment. The company will manufacture a varied line of household and automotive chemicals.

Albert Pilavin is in charge of sales, and Victor Baxt heads production. The Thompson Chemical Co. will manufacture both for export and domestic use.

Quick Reference Chart

For dealers and service-station use, a new quick reference chart on Black Gold brake linings, is offered by L. J. Miley Co., Inc., Chicago, Ill. Showing the proper Miley brake lining sets or Miley Black Gold line brake shoes for all popular passenger cars and trucks, it also lists passenger-car data in alphabetical order, and gives complete list prices which can be quoted quickly.

SERVICE WEED CHAINS

- It pays
- It makes friends
- It keeps your customers' cars, trucks on the road



**WEED AMERICAN
BAR-REINFORCED Best Value in Tire Chains**

Repair ENGINE CRACKS

**in
30 MINUTES!**

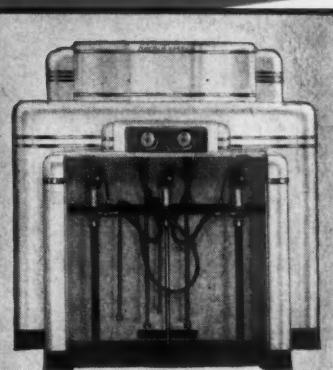
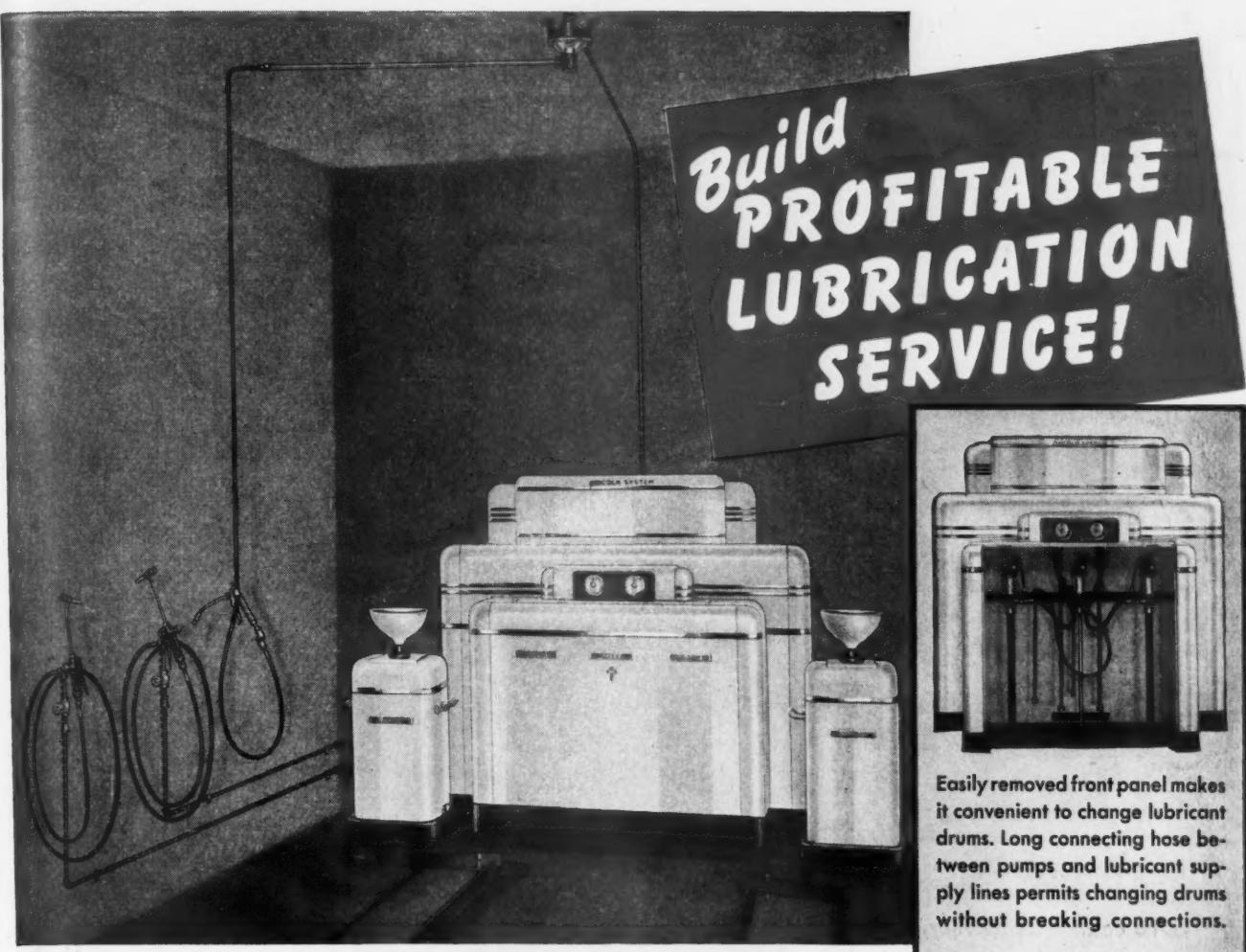
FAST! EASY TO USE!
No special equipment or
training needed with
Wonder Seal. Write for
Folder.

**OFTEN IMITATED . . .
NEVER EQUALLED!**

**WONDERWELD PRODUCTS
MILLER MFG. CO.**

• CAMDEN, N. J. •





Easily removed front panel makes it convenient to change lubricant drums. Long connecting hose between pumps and lubricant supply lines permits changing drums without breaking connections.

LINCOLN

Model 3620 Standard Wall Battery...

This attractive Centralized Lubrication Unit provides a most efficient method of dispensing lubricants direct from original 100-lb. refinery containers. The cabinet houses three famous Lincoln Air-Motor-Operated Lubri-guns—one for chassis lubricant and two for gear lubricants.

The installation is relatively simple—all that is required is a few lengths of pipe and pipe fittings to connect the chassis lubricant pump to an overhead swivel outlet, and the gear

"IT'S THE FINEST THAT MONEY CAN BUY"

lubricant pumps to hose assemblies conveniently mounted on side wall.

Modernize your department with a Lincoln Standard Wall Battery and build profitable lubrication service. Unique in the matchless beauty of its styling, it impresses the customer with the fast, efficient service you can render. The coupon will bring you complete information. Mail it today.

Lincoln Engineering Company • St. Louis 20, Mo.
Gentlemen:

Please send me complete information on Lincoln Wall Batteries.

Name _____

Firm _____

Address _____

City _____ State _____

MA A46-6

LINCOLN

Pioneer Builders of Engineered Lubricating Equipment



AS ADVERTISED IN
Current Issues of
LIFE and TIME

Her Jewels...

custom-fashioned of
sapphires and diamonds
by Frank Hartley

The Motor Oil

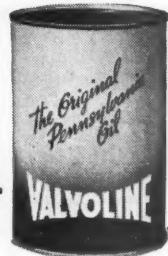
for her car . . .
custom-made by VALVOLINE



To control its quality,
Valvoline is refined in limited
quantity from pure Pennsylvania
crude oil. Every quart costs us
more to make—costs you less to use.
Naturally, Valvoline is not on sale
everywhere, but you will find it at
better dealers coast-to-coast. Sold
with this guarantee: Valvoline's perform-
ance must completely satisfy you
—or your money back!

VALVOLINE

The Original Pennsylvania Motor Oil



Freedom-Valvoline Oil Co.,
Dept. 12G, Freedom, Pa.
Cincinnati, New York,
Washington, Toronto,
Pittsburgh, Atlanta,

Detroit, Chicago,
Los Angeles, Portland,
San Francisco, Seattle
Refineries at
Butler; Freedom, Pa.

"Porto-Pak" Gun Is Introduced

Featuring an automatic venting device that eliminates dripping and loss of lubricant when the coupler is removed from a grease fitting, "Porto-Pak," a new bucket pump is the latest product of the Lincoln Engineering Co., St. Louis, Mo. Of all-steel construction, this improved high-pressure grease gun holds 30 lb. of lubricant. The positive, automatic venting device is in the pump tube assembly and operates instantly when the pump handle is raised to topmost position. Pressure in the hose assembly is relieved permitting lubricant to drain back into the container, eliminating leakage when the coupler is removed from a fitting. The venting device has no moving parts or springs to wear out.

Other advantages claimed are: easy operation with an up-and-down pumping action, no gears or crank. Full open top permits easy opening, loosening two thumbscrews removes the cover. The design of the container allows the use of a follower when pumping heavy lubricants. Rugged construction with container and lid built of heavy-gage steel. A footstep welded across the bottom permits ease of operation on uneven surfaces.

Ask about the
FOX
RAPID
BATTERY CHARGER

FOX PRODUCTS COMPANY
PHILADELPHIA 41, PA.



For Faster and
More Accurate
BATTERY TESTING

IMPERIAL "K"
No. 515-T

BATTERY HYDROMETER

* Thermometer Type

* Shatterproof Glass Jar

THE IMPERIAL BRASS MFG. CO.

1217 W. Harrison St., Chicago 7, Ill.



Clean-Up

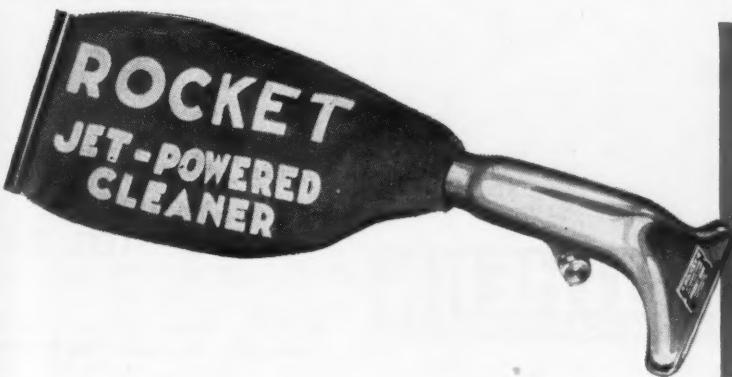
with the
**SENSATIONAL
NEW
ROCKET**
Jet-Powered
VACUUM CLEANER

FOR cleaning interiors, carpets and upholstery of cars, buses, planes, boats. Also for cleaning upholstered furniture, and work benches. Compact—Highly Efficient. Can be used wherever compressed air is available.

An absolutely essential item for every car dealer, service station and repair shop. No moving parts to get out of order. No fire hazard. Connects to air line. Uses but little more

air to clean a car than to inflate a set of tires.

Five minutes with a ROCKET and the car interior is spotlessly clean . . . no mechanic's cigarette ashes, dust, sand or dirt to start a complaint or put the customer in a critical mood. Makes Customers—Friends—and Profits! Price \$24.50, including 25 ft. of hose. Management & Research, Inc., 7038-40 Garrett Road, Upper Darby, Pa.





To make a clean sweep of all three—body, chrome, and fabric—you MUST have three special-purpose cleaners. That's why the big-league washrack operators go to bat with . . .

3-WAY CAR CLEANERS

1. HURRICANE AUTO SHAMPOO The Fast, Easy Car Wash.
2. HURRICANE INSTANT CHROME POLISH Removes Rust while Polishing in One Easy Operation.
3. FABRITE UPHOLSTERY CLEANER For Fine Upholstery and Seat Covers.

To our knowledge (and we've been making cleaners for more than a quarter of a century) it is impossible to make ONE cleaner with characteristics ideal for EVERY purpose. So we make—and millions use—three great cleaners, each ideal for its own purpose.

Prepared under strict laboratory control, and packed in powder form so that every ounce you buy is 100% active cleaning material (no fluid), 3-Way Car Cleaners offer three ways to better cleaning:

1. Ample foam element for uniform results.
2. Proper detergent to remove grease and scum.
3. Water softening element for perfect results in any water.

Compare the Quality—Compare the Price—Consider the Universal Trade-Acceptance.

LAKESIDE PRODUCTS
712 SOUTH FEDERAL ST.
CHICAGO 5, ILLINOIS

New Valve Packing Unit Now Available

Perfect Valve Packing is designed to stop oil loss through leaky intake valve guides, and is now available for all passenger cars and trucks in sizes up to $\frac{1}{2}$ in. valve stem diameter. Perfect Parts, Inc., 55 Amsterdam Ave., New York 23, N. Y., recommends it for every valve and carbon job. The unit has a light tension spring which hugs close to the guide giving enough pressure to keep the oil in, but not enough to interfere with valve action it is claimed. The patented solid graphite base lubricates without oil but absorbs oil, making the valve self-lubricating. The valve packing is protected against oil and wear by a heavy gage steel helmet. The unit is said to be quickly and easily installed without special tools.



FAST BATTERY CHARGERS

TRICKLE CHARGERS

DC POWER UNITS • ELIMINATORS

COPPER SULPHIDE AND

SELENIUM STACKS

THE BENWOOD-LINZE COMPANY

1815 LOCUST ST. • ST. LOUIS 3, MO.

CLUTCH FACINGS • RIVETS

THAT'S NO JOKE, SON.
THE LAUGH'S ON YOU!!
I'VE GOT---
SOUTHERN
REG. U. S. PAT. OFF.
BRAKE LINING

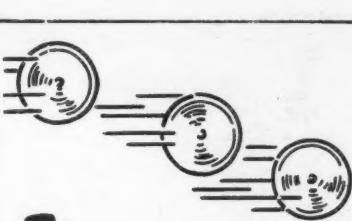


SOUTHERN
FRICTION MATERIALS CO. - CHARLOTTE, N.C.

• BRAKE FLUID

• BRAKE PARTS

HYDRAULIC BRAKE PARTS



To "Keep 'Em Rolling"

Keep your tools
in a
HALLOWELL
Portable Tool Stand



Fig. 1855A

When you're rushed from one service job to another . . . when the fussy Mrs. Jones insists on having her car fixed within the next minute or two . . . and when you're wondering how you can squeeze in a moment for that sandwich . . . that's the time you'll praise the day you ordered a "Hallowell" Tool Stand of Steel. Pushed easily on casters, it moves with you from job to job, keeping all your tools handy in one place. What a time-and-labor-saver it is! No more racing around looking for that wrench, that wire brush, those never to be found screw-drivers. Save time and labor with a sturdily built, long-wearing "Hallowell" tool stand of steel. And say . . . if you haven't ordered yours as yet, by all means write to us today for more information.

"Hallowell" has an extremely complete line of other shop equipment, too. Write for the free "Hallowell" Catalog. "Unbrako" and "Hallowell" products are sold entirely through distributors.

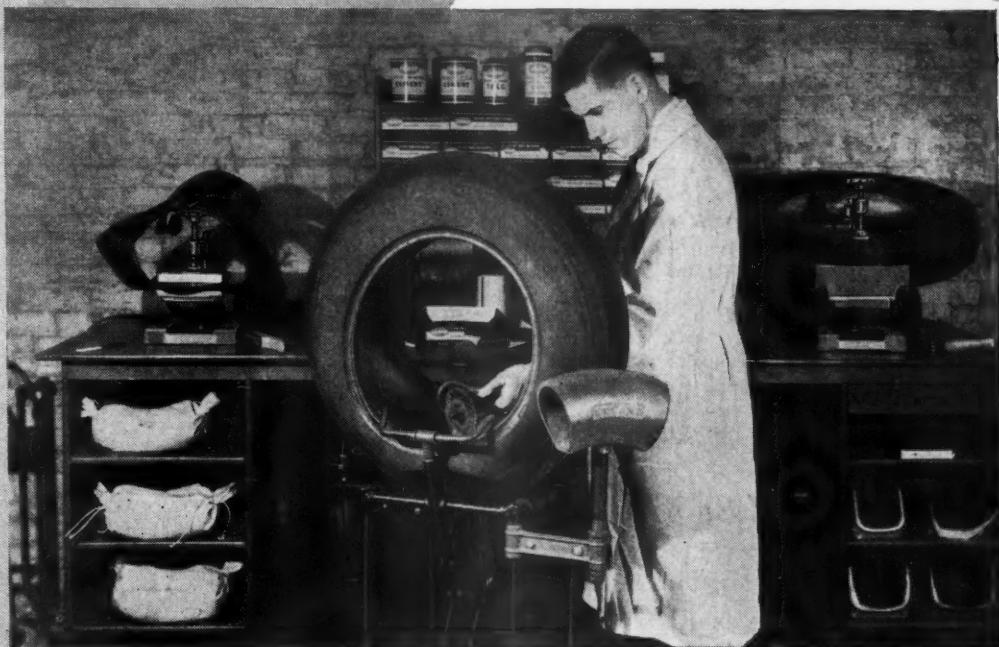


OVER 43 YEARS IN BUSINESS

**STANDARD
PRESSED STEEL CO.**
JENKINTOWN, PA.
BOX 561

Branches: Boston, Chicago, Detroit, Indianapolis, St. Louis, San Francisco

1 OUT OF 3 SERVICE JOBS IS A TIRE OR TUBE REPAIR



Here's how INLAND Dealers handle this Big Profit Service

A big chunk of every dollar spent for car servicing goes ONLY to dealers who handle tire and tube repairs. Tires or tubes figure in *one out of every three service jobs*.*

Over 14,000 dealers now equipped with Inland Vulcanizing Units and Materials make big money satisfying a constant demand for professionally perfect tire and tube repairs.

Set up a complete Inland Tire and Tube Repair Shop in your station. Car owners are sold on the economies of tire and tube repairs, and expect dealers to offer vulcanizing service.

An Inland Unit also puts you in a better position as a new tire dealer. You can offer a higher trade-in allowance on a damaged tire, vulcanize

and sell it at a much higher price than you can sell an unrepairs tire.

Inland Units need little space, are easy to operate, and provide quick vulcanized repairs *that last the life of the tire*. See your automotive jobber for complete details.

Inland Rubber Corporation, a subsidiary of Minnesota Mining and Manufacturing Company.

*Actually 31.29% of all service jobs, according to A. A. A.

**BE SURE
USE INLAND**

Inland Rubber Corporation
33 So. Clark St., Dept. M47
Chicago 3, Illinois

Please send me complete information concerning Inland
Tire and Tube Vulcanizing Unit.

Name.....

Address.....

Town.....



The NEW ALLEN

— *Entirely Automatic*

1. AMBER SIGNAL — It's started on initial boost
2. RED SIGNAL — It stops; battery N. G.
3. GREEN SIGNAL — It's charging; battery O. K.

Completely Engineered — Not Just an Old Style Charger in a New Dress



COMPACT—EASY TO WHEEL
8" Zero Pressure
Hollow Type Tires



ATTRACTIVE APPEARANCE
Two-Tone Colors and
Chrome



RAIN AND DUST-PROOF
Sealed Plastic Panel



METER INDIRECTLY LIGHTED
Dashboard Style



CELLS TESTED INDIVIDUALLY
Locates Those Inoperative



Model
F-125

100 Amperes
Weight: 82 lbs.

Electronically Controlled — An Amazing Development

OTHER *Plus Value* FEATURES

1. Allen designed 4" meter, with Alnico movement — finest, most accurate meter that can be produced.

or more stock batteries to keep them fresh.

2. 6-minute freshening charge before test — prevents condemning completely discharged "good" batteries.

6. Allen designed, chemically anodized, high pressure charging clips with extra heavy copper jaws.

3. Automatic desulphation of batteries when treatment is needed.

7. 100 Amperes copper-sulphide rectifying unit guaranteed 2 years.

4. Completion charge at 10 amperes after fast charge (for those customers who will wait a little longer).

8. Brushless shaded pole 110 volt motor with 6" fan. Down-draft circulation eliminates drawing dust from floor.

5. Overnight charging of 10

9. Relays and Solenoids carry the heavy currents protecting small switches and sockets.

EASY TO OPERATE AND UNDERSTAND

The new Allen Fast Charger is as simple as A-B-C. No complicated dials or switches to use, or interpret!

After starting, by pressing and releasing the manual selector, operation is entirely automatic, and signal lights tell the story. If battery is good, it's charged (green light showing); if not, machine stops (red light showing).

Car owners can readily understand these traffic type signal lights, and have far more confidence in a test that's 100% machine made than one performed by an operator.

Those in the trade who have seen the new Allen Charger pronounce it the finest appearing shop equipment ever built. It's a beauty, no mistake about that!

.. and Look
at the Price!

ONLY \$177.50

SLIGHTLY HIGHER
IN FAR WEST

Your Jobber Has a Floor Sample — Ask To See It!

ALLEN Equipment

ALLEN ELECTRIC & EQUIPMENT CO.
KALAMAZOO, MICH.

Fast, Positive Action Counts in
Making Vulcanized Repairs!

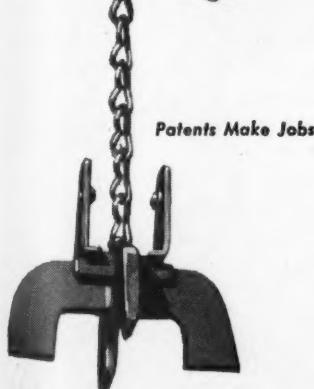
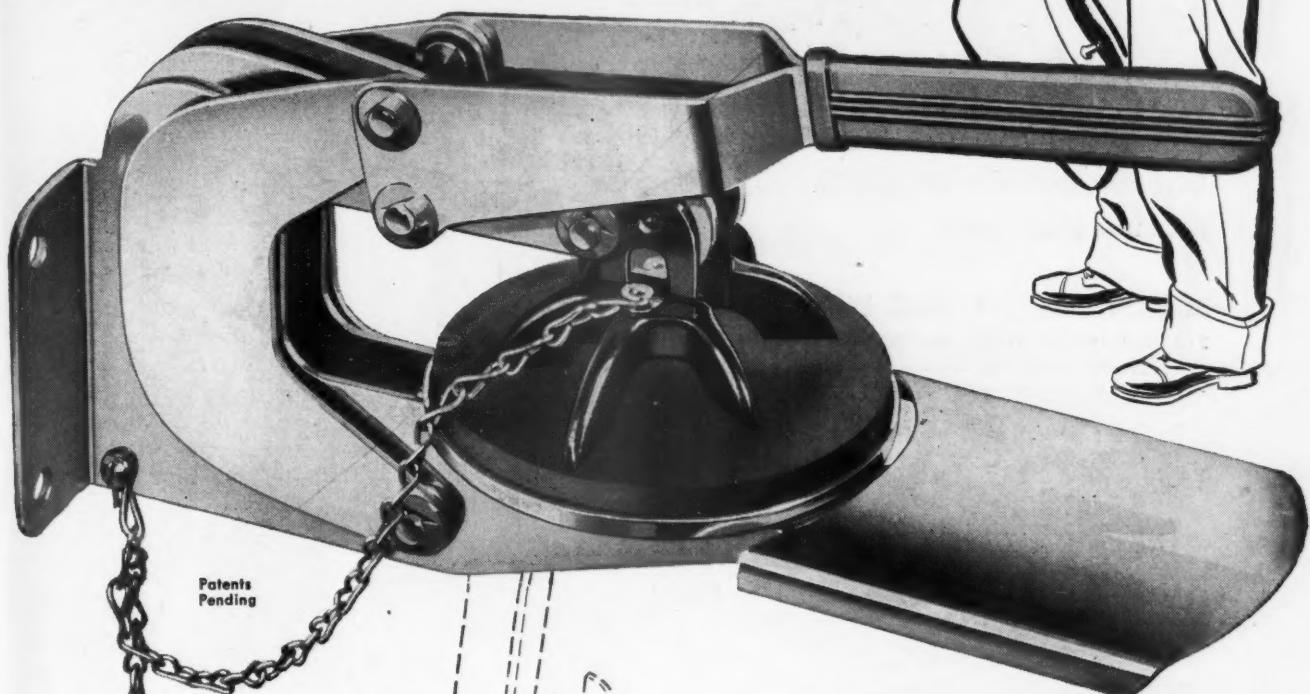
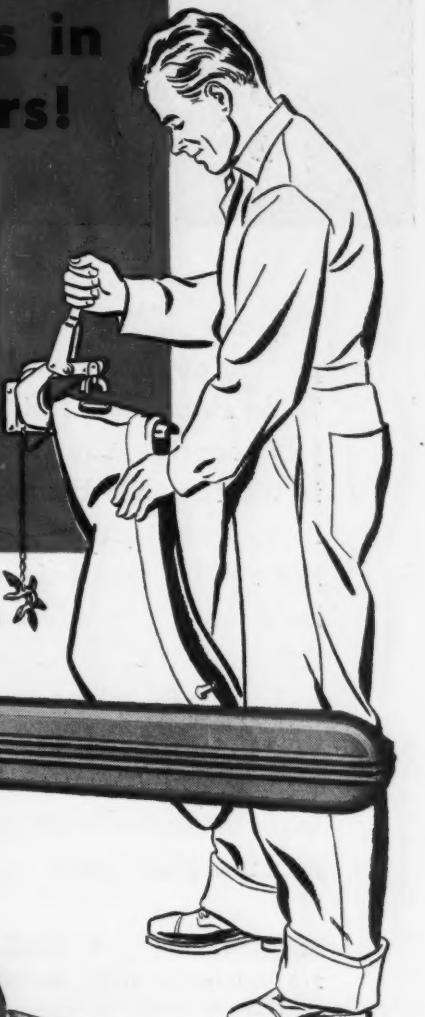
SPEAKER

Match Patch Vulcanizer

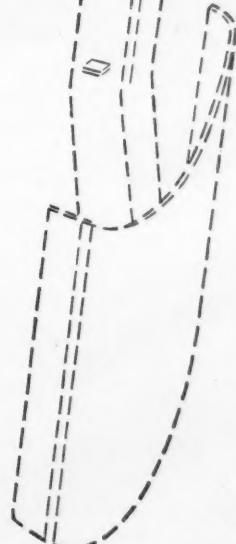
Provides Accurate, Predetermined Pressure

For Any Patch . . . For Any Tube Repair

Large Round Patches • Large Oval Patches • Small Round Patches • Small Oblong Patches • Replacement Valves



SPEAKER TIRE REPAIRS
SPEAK WELL FOR YOU!



NO guesswork! One downward pull on the lever sets AND LOCKS the pressure pan for an unexcelled feather-edge MATCH PATCH repair of any puncture. Time-saving, dependable, it's like an extra man in your shop.

The SPEAKER MATCH PATCH VULCANIZER doesn't depend on the operator's strength or judgment for correct pressure. No screw to turn, no guessing as to the amount of force needed. Pressure is predetermined by compensating wings and toggle action.

This all steel vulcanizer is sold with a complete assortment of MATCH PATCHES and valves for 65 top-quality tube repair jobs of every type. See your jobber, or write today.

J. W. SPEAKER CORP.
MILWAUKEE 12, WISCONSIN

BONNEY

Chrome-Plated TOOLS

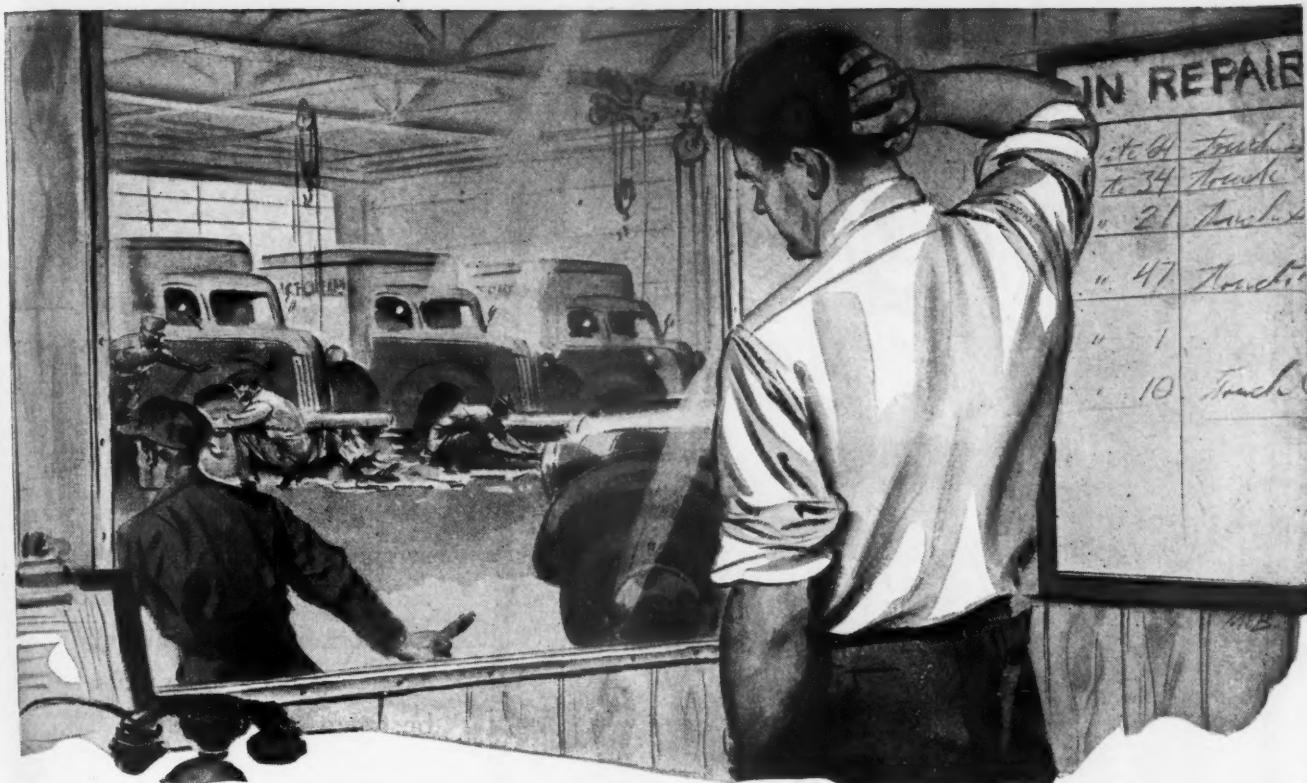
A heavy plating of chromium over a base plating of nickel is what makes Bonney Tools stand out. Just ask your nearby jobber or distributor to show you any tool in the complete Bonney line. Examine it. Notice the smooth, bright, long lasting finish. Also notice its excellent balance and clean machining. It is this kind of craftsmanship together with careful alloy steel selection and custom heat-treatment that has made Bonney Tools the leaders among men who know and use good tools!

BONNEY FORGE & TOOL WORKS

716 N. MEADOW STREET, ALLENTOWN, PA.

In Canada: Gray-Bonney Tool Company, Ltd.
St. Clarens & Royce Aves., Toronto





SAVE SHOP TIME; GAIN ROAD TIME By Cutting Truck Brake Maintenance

You know the cost of lost running time—every fleet superintendent does. Trucks in the repair shop with defective power brakes often cost more repair dollars than a HYCON replacement costs . . . to say nothing of the loss in service and mileage revenues.

Vacuum brakes are eliminated by HYCON *Compound* Cylinders; they're *all-hydraulic*. No vacuum or air-actuated parts can get out of order, because there are none. The complete operation of replacing original equipment master cylinders with HYCON can be done in an hour. Think of the saving!

More Efficient Braking—Low Cost

HYCON Brakes deliver braking pressures in correct proportion to pedal pressures. The driver has *positive control* at all times—whether motor is idling or stalled—to meet every braking requirement. Reduces tire-scuffing, skidding and brake lag; equally efficient under load or no-load conditions; can't freeze. *Controlled* braking cuts over-braking.

Put HYCON to the Test

Order a trial unit from your local power brake distributor, or write direct to The New York Air Brake Company, 420 Lexington Avenue, New York 17, N.Y. Units available now to replace 1½" and 1¾" Di. original equipment master cylinders. Prove their savings and efficiency in your present fleet. Specify HYCON on your new trucks from now on.

CONTROLLED BRAKING



COMPLETELY HYDRAULIC

HYCON

Compound CYLINDER

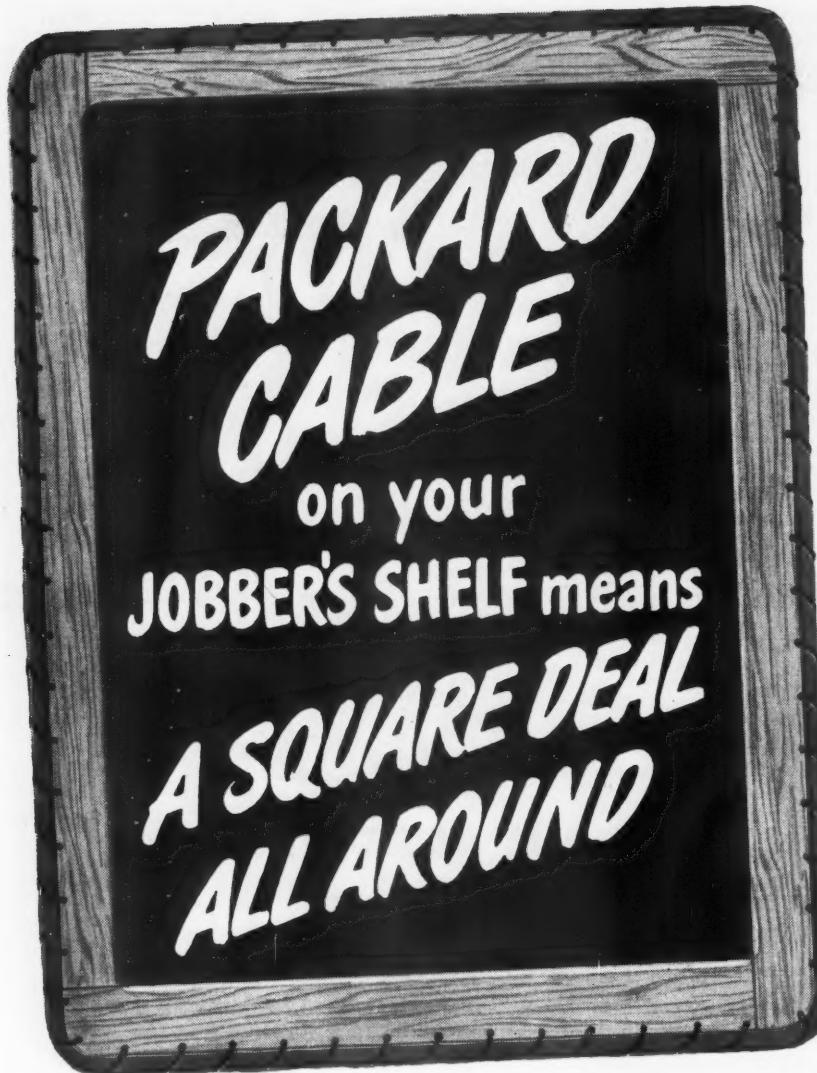
Eliminates brake lag, improves safety factor, simple and quick to install, cuts tire wear and fuel consumption, reduces maintenance.

Look for this Registered Trade Mark



THE NEW YORK AIR BRAKE COMPANY

420 Lexington Avenue, New York 17, New York



WHEN you spot Packard cable on your jobber's shelf, you know it got there on merit alone. He ordered it because he's convinced of Packard quality, Packard performance, Packard leadership. No other factors were involved, for Packard cable is an independent line; it is produced and sold by an organization that makes *nothing but cable*—the best that can be built.

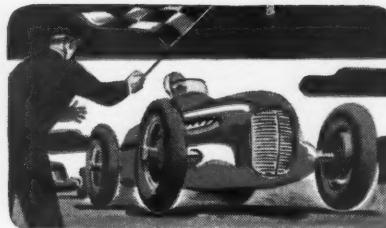
The jobber who carries the first choice in cable doesn't carry second-choice products of any kind. You can count on it!

HERE'S WHY YOUR JOBBER CARRIES PACKARD CABLE



He Believes in Quality

... knows that Packard research and manufacturing are concentrated on one line—automotive cable. That's what Packard's been making for more than 40 years.



He Believes in Leadership

... has watched Packard lead the field in the use of plastics, lacquers, synthetics and other developments to make cable last longer, perform better.



He Believes in Sales

... knows that Packard cable has better acceptance, because it is used as original equipment in more new cars than all other makes of cables combined.



PACKARD ELECTRIC DIVISION
GENERAL MOTORS CORPORATION
WARREN, OHIO

FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING

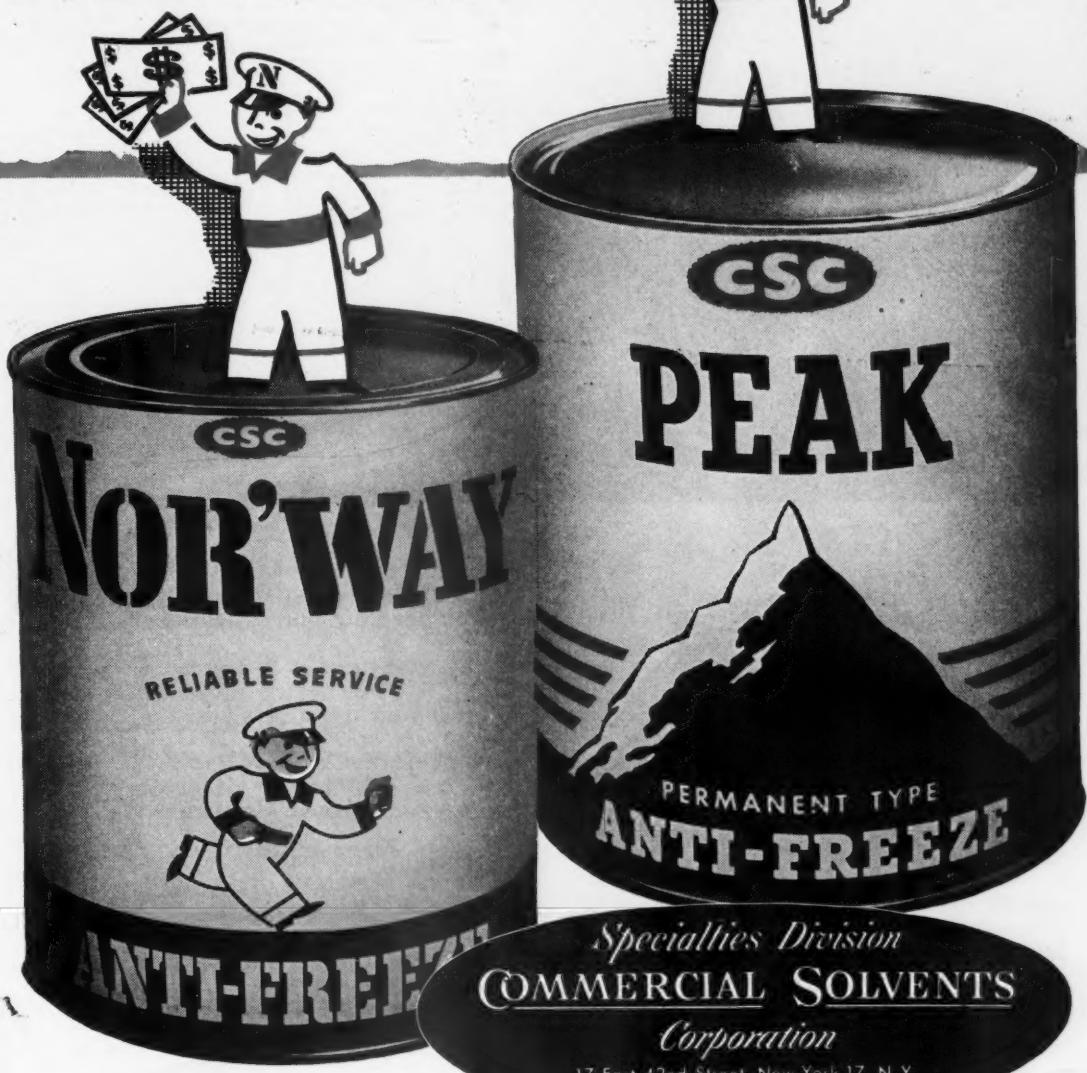
YOU CASH IN 3 WAYS!

WITH PEAK AND NOR'WAY ANTI-FREEZE

Sell your customers Peak* or Nor'way* Anti-Freeze and cash in with Nor'way Cooling System Chemicals. It is easy to sell *complete* fall radiator conditioning when anti-freeze is installed—to prevent leaks, clogging, overheating for winter-long protection. Line up profits 3 ways—from Peak or Nor'way Anti-Freeze, Nor'way Cooling System Chemicals, and your service. Order the *complete* Nor'way line from your jobber when you order your anti-freeze. Cut yourself in on this *extra* business.



*REG. U. S. PAT. OFF.



Specialties Division
COMMERCIAL SOLVENTS

Corporation

17 East 42nd Street, New York 17, N.Y.



Nor'way
Cleaner



Nor'way
Quick-Flush

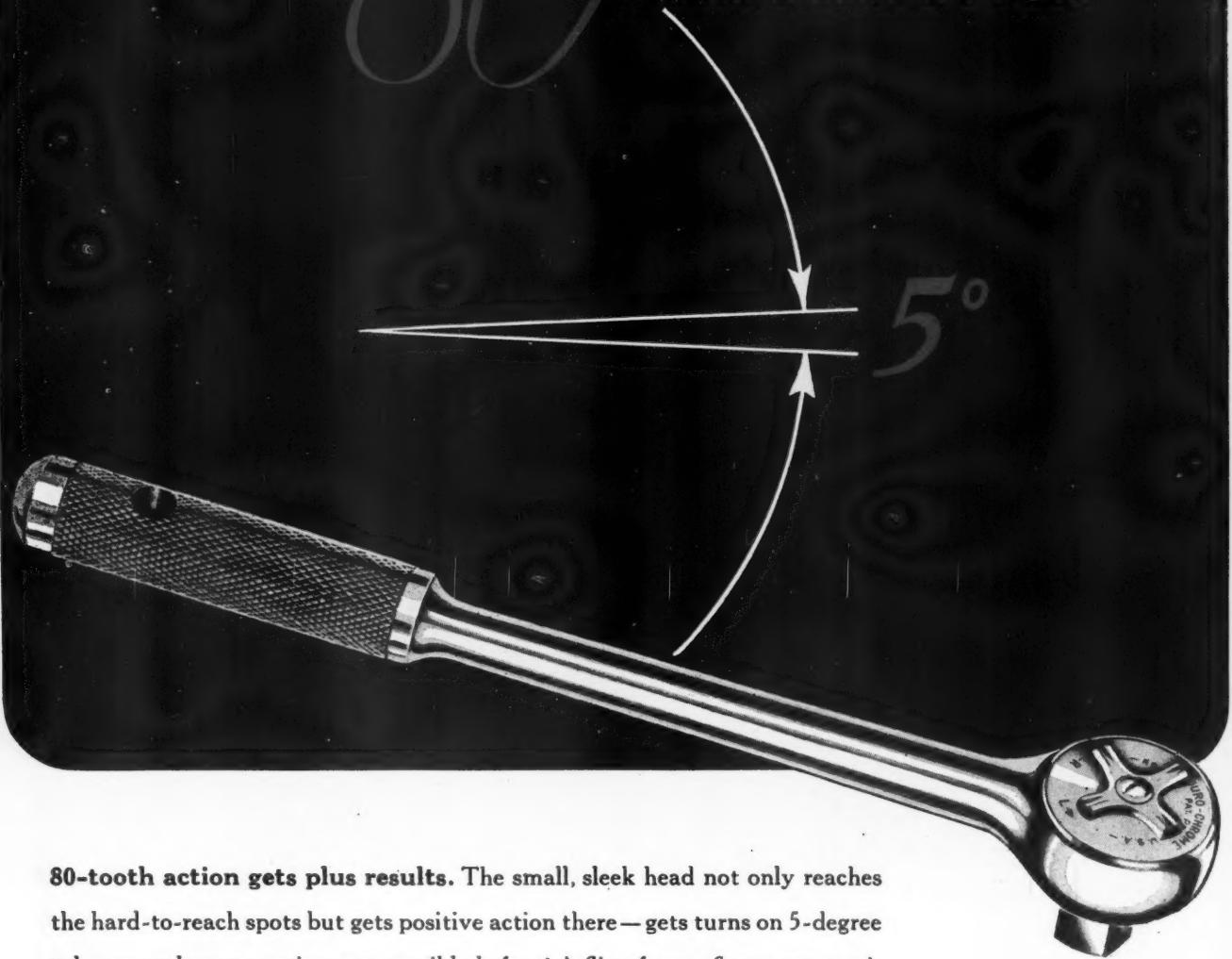


Nor'way
Stop-Leak

New DURO-CHROME

80-tooth Action!

Ratchet Wrench Gets Positive Turns
in Arcs as Narrow as 5 Degrees



80-tooth action gets plus results. The small, sleek head not only reaches the hard-to-reach spots but gets positive action there—gets turns on 5-degree take-ups, where no action was possible before! A flip of your finger gets positive reversal with this new tool. And you'll learn to depend on it; it's Duro-Chrome construction, alloy steel, with strength a full third above Government Specifications. In every drive size the proportion and balance are exactly right, and that triple chrome "skin" is the kind you'll love to touch!...

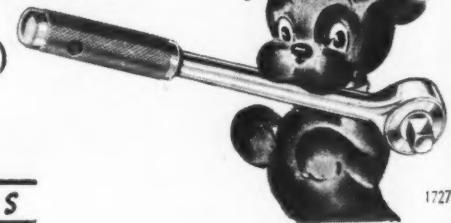
Duro Metal Products Co., 2649 North Kildare Ave., Chicago 39, Ill.

Drives: $\frac{1}{4}$ ", $\frac{1}{2}$ ", $\frac{3}{8}$ "

DURO TOOLS (HAND TOOL DIVISION)
The Mechanic's Best Friend
OVER A BILLION BUILT SINCE 1916

ALSO MAKERS OF DURO MACHINE TOOLS

"Doggone Good!"



More Arvins have been sold

AND DEALERS HAVE MADE
MORE MONEY ON ARVINS

THAN ANY OTHER CAR HEATER!



● Dealer experience proves that Arvins are the best heaters to sell . . . *always safe, always dependable*, using free hot water from normal engine operation. They sell fast, without argument. They're easy to install, and they give complete customer-satisfaction. Time-tested, time-proved, the new Arvin Big Flo Heaters are the finest Arvins ever built.

The new Big Flo Special is the biggest and most powerful Arvin—with extra-large heat and air circulating capacity. It is designed especially for Ford, Chevrolet and Chrysler-built cars. This finest Arvin may be installed on any car, for those who want the best. Also—two other Arvin models at lower prices. And all Arvins defrost the windshield efficiently, when you install them with defroster fittings.

● This year, as in years past, Arvin national advertising and store displays will bring you the easy car heater sales.

Order now!

To be sure you'll have the stock you'll need for the sales season ahead!

MODEL 74H BIG FLO SPECIAL
(with special engine fittings) is the heater to sell for FORD-MERCURY, CHEVROLET, and CHRYSLER-BUILT CARS.

FOR OTHER CARS—Model 74H is installed with Universal Engine Fittings. Model 64H Standard, and Model 54H Junior with universal fittings fit all cars at lower prices. Your jobber salesman will help you work out your complete stock order for the Arvin heaters, engine fittings and defroster fittings you need for your customers.

ARVIN

is the name on many fine products from

NOBLITT-SPARKS INDUSTRIES, INC., COLUMBUS, INDIANA

NEW FINANCE PACKAGE HOLDS \$7,500.00 PROFIT FOR YOU

Recent General Finance ads have shown that metropolitan area dealers stand to lose \$7,500.00 or more in Profits in the next 12 months through loss of reserves on bank-financed deals.

**This new package will help you
regain control of your financing!**



NEVER BEFORE has a dealer-finance plan been so liberal as BUYERS BENEFIT AGREEMENT. Never before has a finance company recognized the public's desire for a finance plan that is really complete—low in cost—and extremely liberal in its consideration of the time-buyer's problems.

This new plan gives the time-buyer everything he needs and wants—in one package—at one place—at one low cost! It gives him guaranteed protection! It gives YOU continued reserve income, continued generous wholesale, continued liberal used car financing, continued financing of marginal credit risks.

There is no "mystery" to this installment agreement. Every point of protection for the time-buyer is plainly stated in crystal clear, simple, understandable language.

Here are the highlights. It gives the buyer:

1. THE CAR of his choice.
2. LOW FINANCE COST—as low as the lowest.
3. COMPLETE INSURANCE—for car and credit-life coverage for owner.
4. A.T.A. MOTOR CLUB SERVICES—touring, routing, towing.
5. PERSONAL SECURITY—see details at right.

★ ★ *

DO THIS NOW. Write, wire or call GFC headquarters in Chicago. Ask to have the full plan presented to you by our nearest office. Let us show how this new plan will preserve your reserves, wholesale, and used car financing.

***It pays to Finance
with GENERAL Finance!***

NO OTHER PLAN OFFERS
SO MUCH CONVENIENCE...
...SO MUCH PROTECTION
PLUS LOW COST!

Be the first to offer it!

● **NO DOUBT ABOUT INSURANCE PROTECTION.** The amount, kind and cost specifically stated. Policies delivered to owner.

● **NO HIDDEN OR DISGUISED CHARGES.** The guaranteed protection offered by this contract does not permit hidden or disguised charges. Any charge in excess of stated costs in agreement is refunded to buyer.

● **LIBERAL PERIOD OF GRACE.** Seven days on individual payments—with an additional 60 days in case of undue hardship.

● **NO WAGE ASSIGNMENTS.**

● **REFINANCING PRIVILEGE** at same low rate of charge.

● **LOW DELINQUENCY FEES**—limited to 5% of delinquent instalment.

● **NO DEFICIENCY JUDGMENT** if 50% or more of contract paid.

● **NO OTHER SECURITY THAN CAR** asked for or accepted.

● **GENEROUS REBATE** if paid in full before due date.

General Finance Corporation

BRANCH OFFICES IN



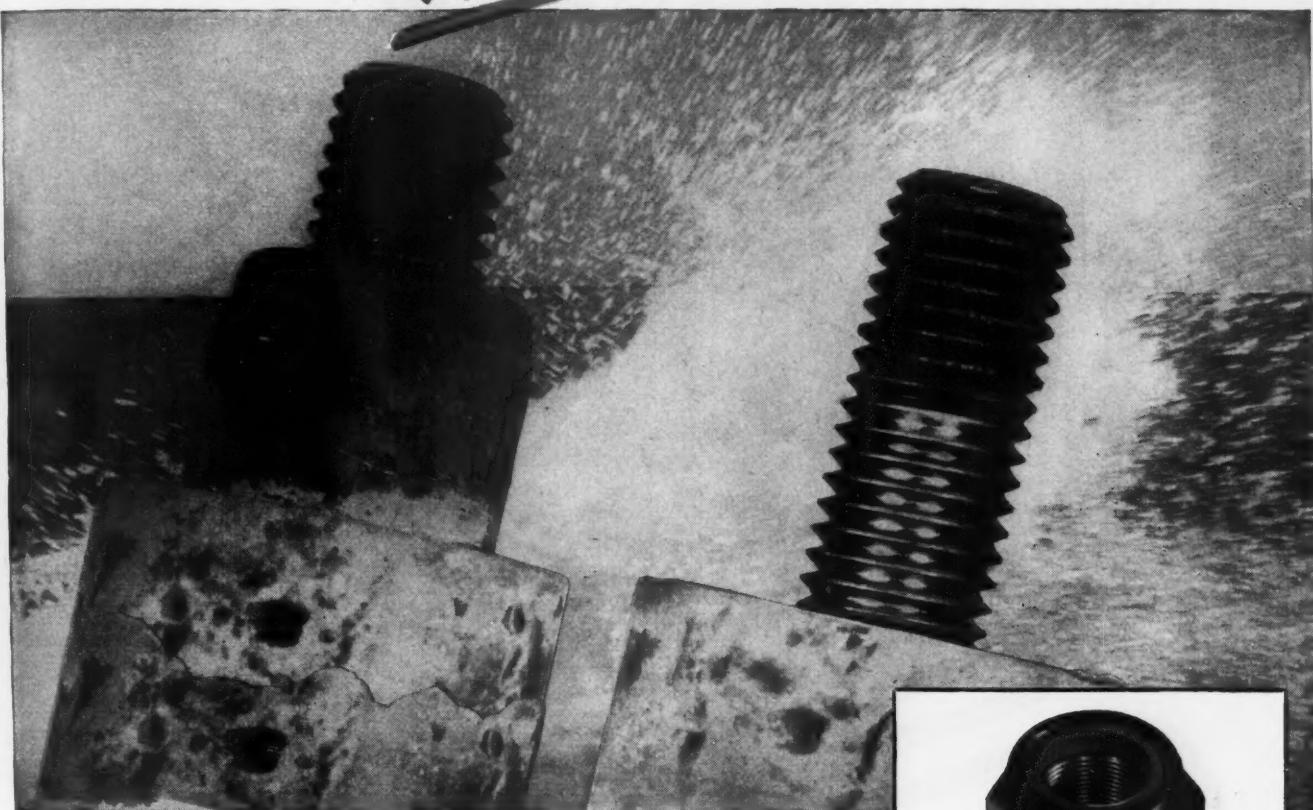
PRINCIPAL CITIES

184 West Lake Street • Chicago 1

SELF-SEALING TO

Prevent Corrosion

OF BOLT THREADS



—with the Red Elastic Collar that protects the threads against Liquid Seepage

Moisture cannot penetrate the Red Elastic Collar. Study the heavily corroded bolt and nut assembly in the unretouched test photograph. It has been subjected to the equivalent of three years' exposure to moisture . . . to industrial smoke and grime . . . to climatic change. Study the same bolt with the nut removed. Look at the bolt threads that were inside the Elastic Stop Nut. They're as good as new! Why? Because the Red Elastic Collar protects them permanently against Liquid Seepage—and

Corrosion. Elastic Stop Nuts are easily removed because they cannot 'rust solid'. They prevent fasteners from failing because of corrosion weakened threads.

Here's a challenge: Send us complete details of your toughest bolted trouble spot. We'll supply test nuts—FREE, in experimental quantities. For further information or literature address: Elastic Stop Nut Corporation of America, Union,

New Jersey. Representatives and Agents are located in many principal cities.



The RED ELASTIC COLLAR

—denoting an ESNA product—

. . . is threadless and permanently elastic. Every bolt—regardless of commercial tolerances—impresses (does not cut) its full thread contact in the Red Elastic Collar. This threading action produces a compressive, radial-reactive pressure against both the top and bottom sides of the bolt threads . . . insures a permanently tight, full contact between the bolt and nut threads . . . and makes all Elastic Stop Nuts self-sealing against Liquid Seepage.

As a result, all Elastic Stop Nuts protect permanently against thread corrosion.



ELASTIC STOP NUTS



INTERNAL
WRENCHING



ANCHOR



INSTRUMENT
MOUNTING



SPLINE



CLINCH



PEPPER

GANG
CHANNEL



CAP

PRODUCTS OF: ELASTIC STOP NUT CORPORATION OF AMERICA

JULY, 1946

When writing to advertisers please mention Motor Age

133



Distinctive!

Crescent Wiry Joe ignition sets are distinctive—in color, in quality, in packaging! Check these outstanding Wiry Joe features:

LACQUER: Wiry Joe special maroon lacquer, applied in as many as twenty-four coats, provides an outer covering highly resistant to heat, cold, gasoline, oil, grease, moisture, salt air, corona.

BRAIDING: Wiry Joe braids are made of soft, combed, or super-carded yarns of first quality.

INSULATION: Wiry Joe insulation has outstanding dielectric properties, due to exclusive Wiry Joe developments in compounding synthetic rubber.

PACKAGING: Wiry Joe attractive, sturdy, metal-edged packages increase shelf-display value; protect the ignition set up to the point of installation.

✓ CHECK THE WIRE ON EVERY JOB!



Wiry Joe
AUTOMOTIVE CABLE
manufactured by
THE CRESCENT COMPANY, Inc.
Pawtucket, Rhode Island

BALANCE WHEELS



● Balanced wheels, good brakes—they depend on each other. It's natural, and profitable, to service them together.

And it's an easy combination to sell. When you remove a wheel for balancing, it takes just a few minutes to check the brake linings. Show your customer the wear or grease—point out the expense of scored drums, the danger of accidents. You'll find at least one out of four cars is ready for a relining, and the customer ready to buy.

Reline with Raybestos, and you give *full-range* brake control—easy, positive *slow-downs*, as well as quick, smooth stops. Raybestos builds all the seven types of brake lining necessary for this full-range control on every installation. Only Raybestos offers the right combination of these materials in PG (Proving Ground Tested) Sets, clearly identified, easy to install.

THE RAYBESTOS DIVISION of Raybestos - Manhattan, Inc.
Bridgeport, Connecticut

RELINE WITH

Raybestos

AMERICA'S BIGGEST SELLING

BRAKE LINING

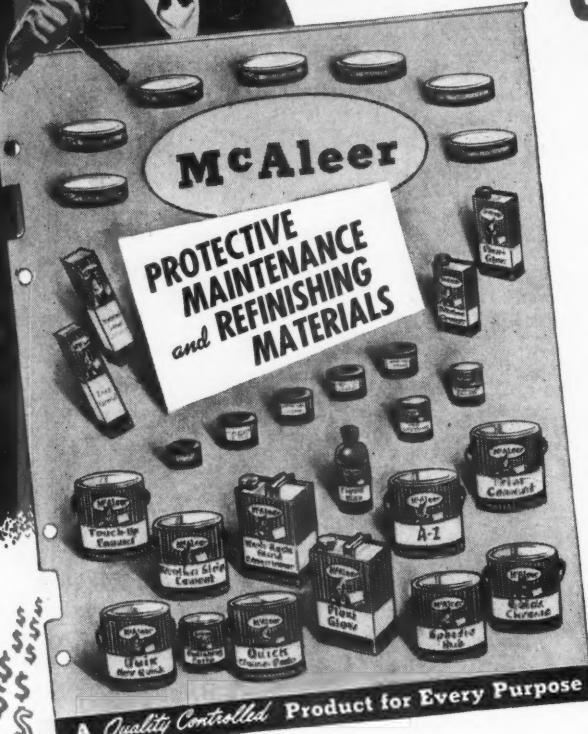
PG PROVING GROUND TESTED
BRAKE LINING, BRAKE BLOCKS,
CLUTCH FACINGS, FAN BELTS, HOSE
for Cars, Trucks, Buses and Tractors

28 McAleer MONEY MAKERS



Get Your Copy **QUICK**

You Can Make Money with
McAleer — because
McAleer means Business



A Quality Controlled Product for Every Purpose

- PACKAGED FOR MAXIMUM SALES APPEAL**
- RIGID LABORATORY CONTROL = UNIFORM QUALITY**
- SIZED FOR SHOP USE AND RESALE**
- MAXIMUM DEALER PROFIT**
- COMPETITIVELY PRICED**

McAleer

Automotive Division

MC ALEER MANUFACTURING CO., ROCHESTER, MICH.

AUTOMOTIVE — HOUSEHOLD — INDUSTRIAL PRODUCTS

McAleer Manufacturing Co., Ltd., Chatham, Ontario

When writing to advertisers please mention *Motor Age*

MOTOR AGE



LIFE GETS EASIER EVERY DAY!

NOW IT'S **HALLOWELL** SPEED TOOL KITS



→
"HOME" KIT
with interchangeable parts

→
"SOCKET SCREW" KIT
with interchangeable bits

→
"AUTO" KIT
with interchangeable parts

→
"SOCKET WRENCH" KIT
with interchangeable sockets

Yep — they're just one more important addition to a long line of 1946 "make-life-easiers" . . . like home freezers and sun-heated homes and jet airplanes that make it possible to breakfast in New York and lunch in San Francisco . . .

Of course, the "Hallowell" Speed Tool Kits may not be on a par with sun-heated rooms or jet planes . . . but they will play an important role in the life of busy people, and, they'll mean a lot, to those who aren't so busy, but who prefer things *neat, tidy, compact . . . and convenient*.

There are seven different Kits: 2 sizes of the "Auto" Kit; 2 of the "Socket Wrench" Kit and 2 of the "Socket Screw" Kit . . . for a greater range of tool sizes; and there is a "Home" Kit. All the Kits, each one of which will fit in the palm of your hand, contain a total of 50 tools . . . Phillips, flat and hex screw drivers; clutch head bits; hex socket wrenches; a gimlet, a reamer, a tack-lifter, and even a bottle opener.

The tools are made of high-grade alloy steel; the handles of durable Celanese* plastic. All but the "Home" Kit have a swivel bit-chuck for better leverage. And . . . each Kit will give long, hard wear . . . because it is a "Standard" product, made to "Standard" specifications. Write for our 8-page booklet that fully describes these handy Tool Kits.

Obtainable at Suppliers throughout the country. If your Supplier does not carry them, send his name to us, along with yours, and you will be taken care of promptly.



Kits: Patents Pending

Molded
Celanese*
Plastic Handles

OVER 43 YEARS IN BUSINESS

*Reg. U. S. Pat. Off.

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA., BOX 561 • BRANCHES: BOSTON • CHICAGO • DETROIT • INDIANAPOLIS • ST. LOUIS • SAN FRANCISCO



DON'T squint in a futile attempt to see clearly through a dirty windshield. Instead, wash your windshield while you drive.

To enjoy this wonderful aid to safer, more comfortable driving, you merely touch a button and your windshield is squirted with two jets of water. A few swings of your wiper blade complete the cleaning operation. Repeat as often as necessary for a clear safe view of the road ahead.

A Trico Automatic Windshield Washer can be quickly installed on any car, old or new. Costs only a few dollars. Available through dealers and service stations everywhere.



Automatic Windshield Washer

Trico Products Corporation, Buffalo 3, N. Y.



For Faster Output and Greater Income -Sell this General Motors Product

Built to original equipment specifications, Inlite goes on fast—comes into normal operation immediately and eliminates the need for time-wasting readjustments . . . because it performs the same on the first braking as it does after 10,000 miles.

Furthermore, Inlite gives positive pedal pressure that's right for both men and women drivers. And, every

Inlite segment has the same uniformity of structure—the same long wear

A General Motors Product



Available Everywhere Through
United Motor Service Distributors

factor—for straight-line stops over a longer life. So, for satisfied customers . . . for faster output and greater income, order Inlite from your jobber today.

INLAND MANUFACTURING DIVISION

General Motors Corporation
Dayton, Ohio



What I Want is Gas-Oil Hose
that will not swell, rot, clog,
leak, break or collapse.



NOW...we can give you
RESISTOFLEX Flexible Hose
with **COMPAR TUBING**

We can now make immediate shipments of this remarkable flexible hose. It is totally unaffected by gasoline, Diesel fuel, and lubricating oils. In vibration tests the hose and fittings have repeatedly outlasted the test equipment. It withstands more torsion than hose of any

other construction. Display assortments of popular sizes boost sales and hold down inventory. Get the facts now! *Original factory equipment on vehicles, vessels, aircraft and oil filters. A complete line of flexible hose and fittings for replacement.*

RESISTOFLEX

Trade-Mark Reg. in U. S. & Can. Pat. Off.

Resistoflex Corporation
Belleville 9, New Jersey



PLANTS: Belleville, N. J.;
Elkhart, Ind.; Toronto, Can.

*Back of to-day's successful
station is Service . . .*

BACK OF SERVICE IS MODERN U.S. EQUIPMENT

Today the motorist is in the driver's seat. He demands proper service and goes where he can get it—and it's only the station with modern equipment that can render this complete service.

For all 'round performance and economy nothing equals or surpasses U. S. equipment. This equipment was created, designed and engineered by men who have devoted over a quarter of a century in the automotive equipment field. Each and every unit is precision built in a modern plant—and is of the finest materials available. That's why U. S. equipment is acclaimed and recognized as the world's finest by any test.

There is a U. S. Air Compressor, lift and lube unit to fit the needs of every service station, car dealer etc., from the largest to the smallest.

Send for free catalogs on complete line.

UNITED STATES AIR COMPRESSOR CO.

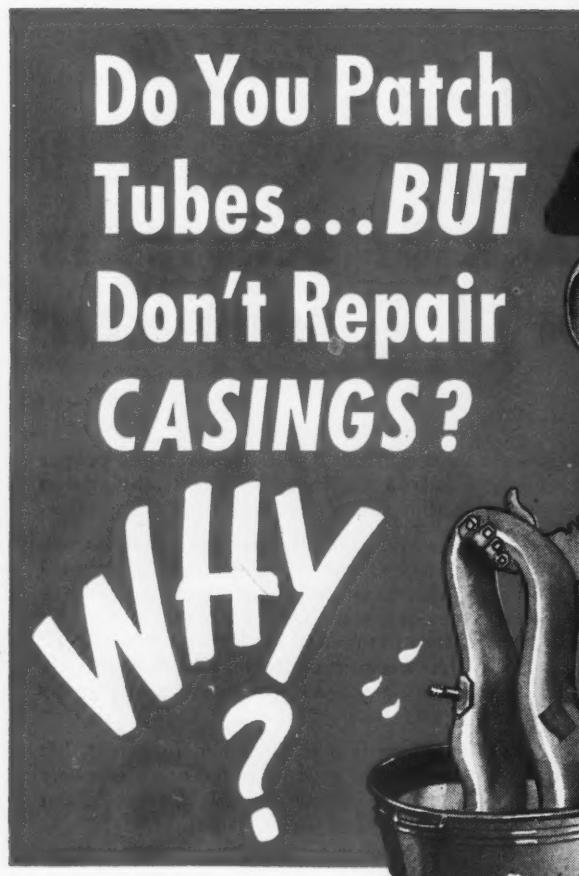
5300 HARVARD AVE.
CLEVELAND, OHIO

AIR COMPRESSORS
HYDRAULIC LIFTS
GREASING EQUIPMENT

Export Address—
38 Pearl Street,
New York, N. Y.

Cable Address—
"Widbloco"





Casing repair is highly profitable. If you do a good job of casing repair, the word spreads and you build goodwill and attract new customers. If you send the casing out for repair or send the customer elsewhere, you make profits for your competitor—lose profit yourself—and—teach your customer to go elsewhere where he can get complete service.

**It's Easy to Repair Casings — IF
You Have Proper Equipment and
Materials — and Proper Training**

Bowes "Seal Fast" offers you all the essentials. Our complete equipment is inexpensive—surprisingly so. Bowes tire repair materials for both tubes and casings have gained country-wide reputation as the

best obtainable—and—equally important, we send factory-trained experts to give you thorough training.

We spend many thousands of dollars each year in magazine advertising directing the motoring public to dealers who display the Bowes "Seal Fast" Safe Tire Repair Sign. As a matter of protection to us and to you, no dealer may display this sign until we are satisfied that he is thoroughly trained—thoroughly capable of doing a good, safe tire repair job.

If you are interested in building goodwill and added profits—write today. Our distributor in your territory will be glad to call and give you details—without obligation.



BOWES AUTO POLISH AND CLEANER...

... the polish that gives more shine with less "elbow grease" . . . is nationally advertised in Saturday Evening Post, Collier's and Farm Journal. Cash in on this fast-selling profit-maker—have it on your shelf.

BOWES
SEAL
FAST

NATIONALLY
ADVERTISED

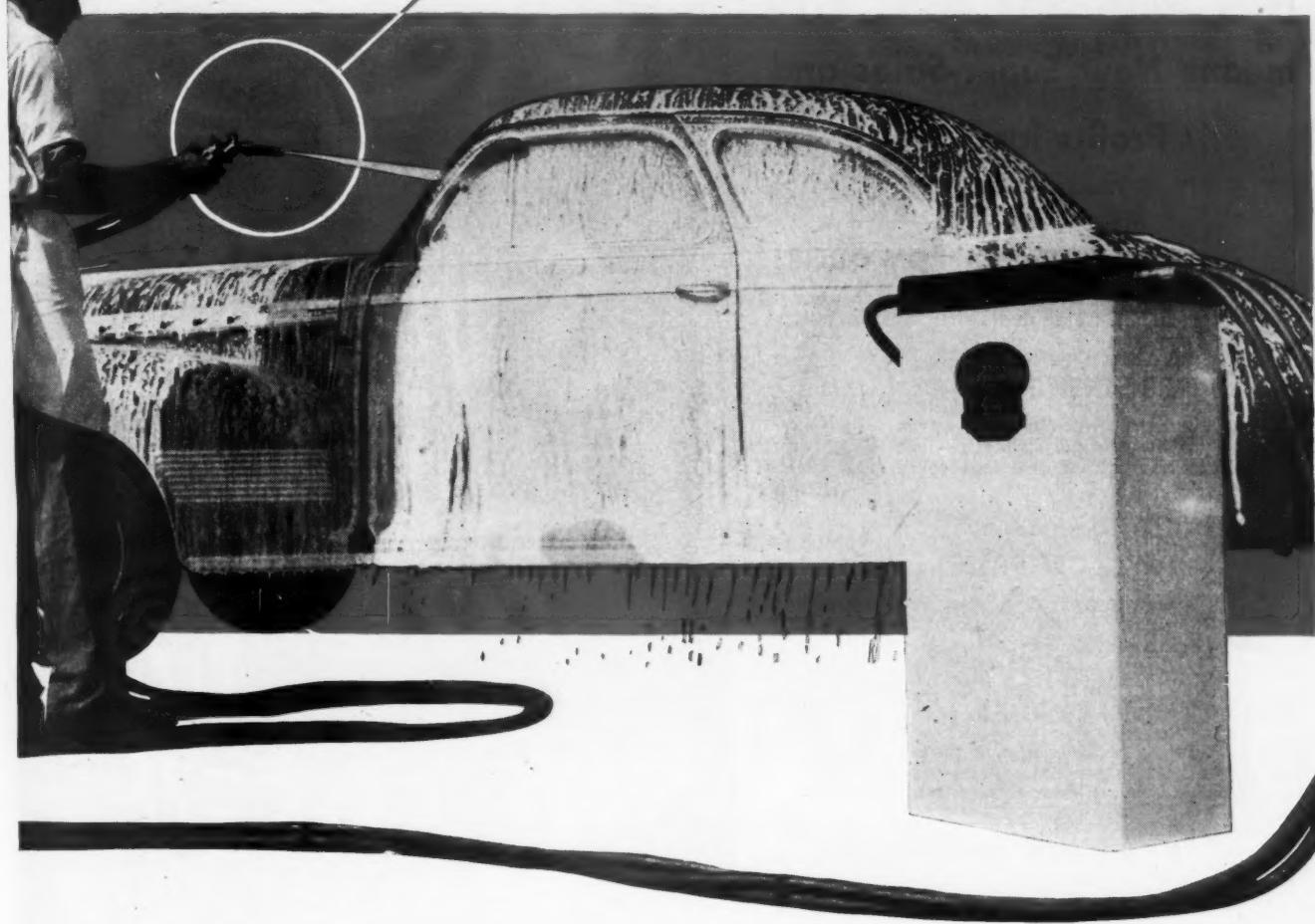
TIRE SAVING SYSTEM
BOWES "SEAL FAST" CORPORATION, INDIANAPOLIS 7, INDIANA

It's back TURCO CAR SHAMPOO UNIT

with exclusive patented Finger-Tip Control

Far faster Car Cleaning

Greater Profits



The new, improved Turco Car Shampoo Unit is back. Now you can clean a car in 12 minutes... give the finish a far more lustrous shine... greatly increase your wash-rack profits.

The amazing efficiency of the Turco Car Shampoo Unit is made possible through an exclusive patented Finger-Tip Control that supplies air, air and water rinse, and Car Shampoo* solution through a single nozzle... the original Turco Car Shampoo substitutes modern chemistry for slow "elbow grease" methods. For Turco Car Shampoo works like magic... floats away dirt, grease and oily particles... permits air drying to a bright, lustrous, film-free finish without chamoising.

DRAWS MORE AND BETTER CUSTOMERS

Car cleaning with this remarkable unit is a spectacular operation... has unusual sales creating eye-appeal. This fact, plus vastly superior results, draws the top quality trade that demand the best in oil, gas, lube jobs and car cleaning.

AN INEXPENSIVE, ATTRACTIVE, PRECISION BUILT UNIT THAT SOON PAYS FOR ITSELF

Turco Car Shampoo Units are compact, streamlined, precision engineered for a long, trouble-free life. Each has large capacity—over 100 cars without refilling—automatically apportions solution with

*Trade-mark Reg.

water. Best of all, they are priced right... and soon pay for themselves in added profits.

BACKED BY FREE ADVERTISING AIDS

Attractive display banners and hand-out cards are provided free by Turco with all Car Shampoo Units.

Phone your nearest Turco Field Serviceman for a demonstration or write Dept. MA-7.



TURCO

INDUSTRIAL CLEANING COMPOUNDS

TURCO PRODUCTS, INC. Main Office & Factory: 6135 S. Central Ave., Los Angeles 1
Offices & Factories: 125 W. 46th St., Chicago 9 - 1606 Henderson St., Houston 1, Texas
New York Office: 415 Greenwich St., New York 13 - Offices & Warehouses in All Principal Cities

NOW! NEW! Super Strength!

Get these 5 fast reasons why
New Super-Safe Super Pyro
means New Super-Sales and
Profits for You!



NEW FREEDOM FROM ODOR!

Now, new Super Pyro gives customers an anti-freeze that's virtually odorless!



NEW SUPER-STRENGTH!

A new chemical formula now gives Super Pyro new super-strength—less Super Pyro now gives *more* anti-freeze protection!



NEW LOW PRICE!

New low price on Super Pyro now means greater savings for motorists, more sales for you!



NEW SUPER-PACKAGE!

New Super Pyro package in rich purple and gold means faster, positive customer identification—says "quality" out loud!



NEW SUPER ADVERTISING!

Prestige advertising in national magazines plus new "high-readership" local newspaper ads, plus striking outdoor posters to sell more customers, quicker!

- Add up these powerful new product advantages, plus a brand new package, plus new-type *tested* national magazine and local newspaper advertising and you can see why new Super-Safe Super Pyro is your biggest anti-freeze sales and profit-getter. Order now.



SUPER PYRO

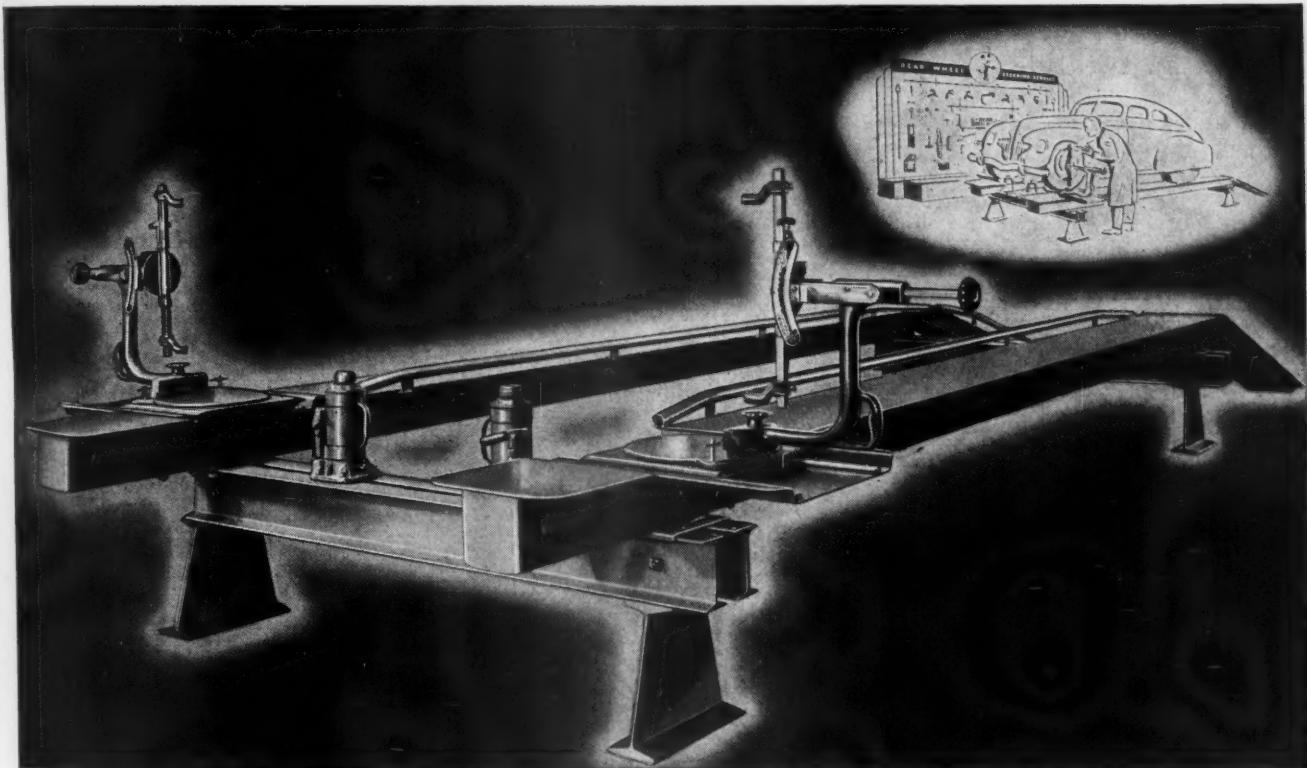


U. S. INDUSTRIAL CHEMICALS, INC.

YOU're IN the



When You Hang Up Your BEAR SIGN!



1625

...and You're IN the MONEY with a

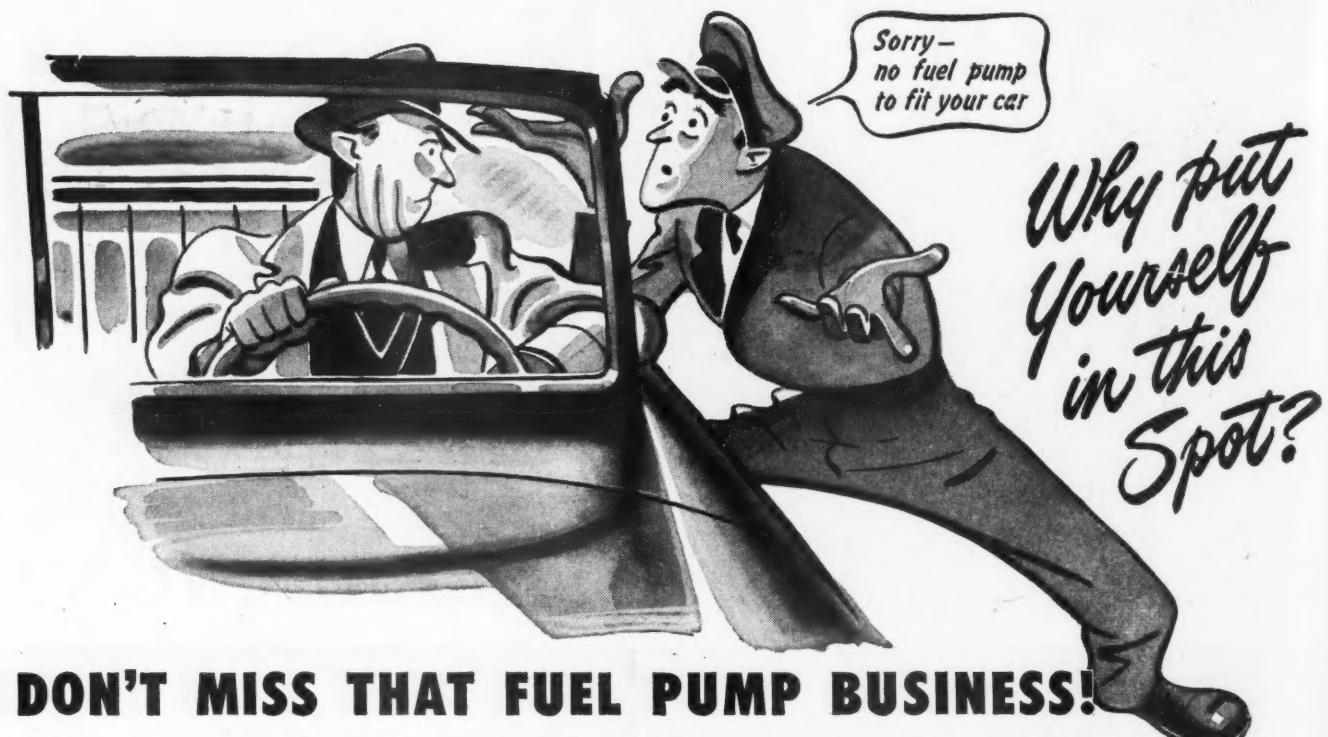
NEW BEAR 195-82

As profit records prove across the nation, you're really IN the alinement business with this great Bear service. The 195-82 DOES MORE, and DOES IT RIGHT THE FIRST TIME, which prevents come-backs, and satisfies customers, and wins more customers.

This service handles cars and trucks up to 1½ tons. If the job calls for adjusting, pulling knees ahead, straightening axles and rear housings or tracking wheels, this master service does them all. AND when you're

ready to expand, you add a few standard parts and this extra-strong service also becomes your frame straightening department.

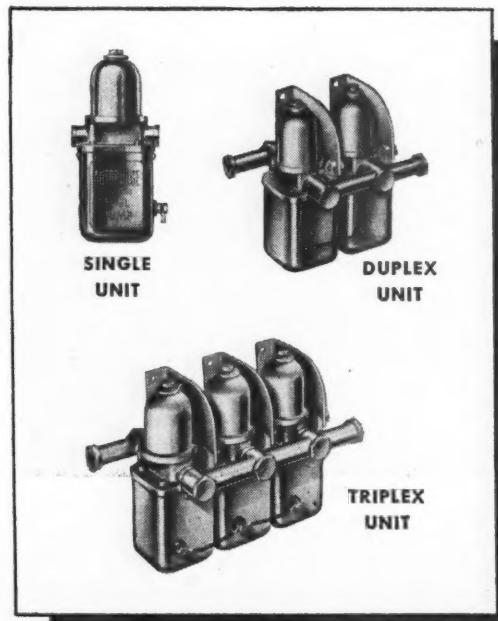
With Bear's name and national advertising back of you, and the whole country aware of hard steering, tire trouble and mounting accidents due to mis-alinement in old cars, this is the right time to see your Jobber or write Bear Mfg. Co., Dept. MA, Rock Island, Ill., for complete details on the Bear 195-82!



DON'T MISS THAT FUEL PUMP BUSINESS!

AUTOPULSE SERVES ANY CAR OR TRUCK...

STOCK INVESTMENT AS LOW AS \$18.00



Autopulse will set you up to furnish any driver with a new fuel pump regardless of what car he is driving—one and the same pump used on all! Your complete inventory can be as low as \$18.00. A small added investment sets you up for trucks also.

The Autopulse Electric Fuel Pump has been used by car owners and fleet operators for 20 years.

When you handle the Autopulse, you'll never have to turn a job down because you haven't the right model or size for that particular vehicle. The Autopulse is the **UNIVERSAL FUEL PUMP**, easy to install and always ready to go.



Write us direct for quotation

AUTOPULSE

Corporation

2321 Brooklyn Ave., Detroit 1, Michigan

Tie Up With This Message

Millions of car and truck owners will see this advertisement in the July 13 issue of the Saturday Evening Post and the August 10 issue of Collier's. This ad which is reproduced in smaller size here is one of a series of half-page two-color advertisements appearing this year in the Post and in Collier's.

Tie in with this advertising program and reap the profits resulting from the greater consumer demand it will create for Wagner Lockheed No. 21 fluid. How can this be done?

First—get an adequate stock of hydraulic brake parts and fluid from your Wagner jobber. Second—identify your place of business as one definitely interested in hydraulic brake service by displaying a metal Wagner Lockheed hydraulic brake service sign. (Several types are available). Third—remind EVERY customer to have his hydraulic brake fluid checked NOW.

See your Wagner jobber today, or write to Wagner Electric Corporation, 6498 Plymouth Avenue, St. Louis 14, Missouri, U. S. A.

H46-14

For Safety's Sake
BRAKE FLUID
SHOULD BE CHECKED
TWICE A YEAR

...and when fluid is needed, specify

Wagner
LOCKHEED NO. 21
HYDRAULIC BRAKE FLUID

Don't guess or gamble on the condition of the brake system of your automobile. Play safe. Ask your serviceman to check your car to determine whether the brake fluid needs to be replaced, or a few ounces of fluid added to bring the system fluid up to the proper level.

If fluid is needed, specify Wagner Lockheed No. 21 Hydraulic Brake Fluid. There is no finer brake fluid. No. 21 functions under all driving temperatures. It amply lubricates the system, and maintains its chemical characteristics over a long period of time. Used by automobile manufacturers, and recommended for all cars and trucks having hydraulic brakes.

In addition to taking care of the fluid level, ask your serviceman to inspect wheel brake parts for wear. If any need replacement, specify genuine WAGNER LOCKHEED HYDRAULIC BRAKE PARTS. Minor repairs today may save you a major service expense tomorrow. Be wise, act NOW!

Wagner Electric Corporation
ESTABLISHED 1891
6498 Plymouth Ave., St. Louis 14, Mo., U. S. A.
(In Canada: Wagner Brake Company Limited, Toronto)

LOCKHEED HYDRAULIC BRAKE PARTS
FLUID . . . NORMAL . . . AIR BRAKES
Co-Max BRAKE LINING

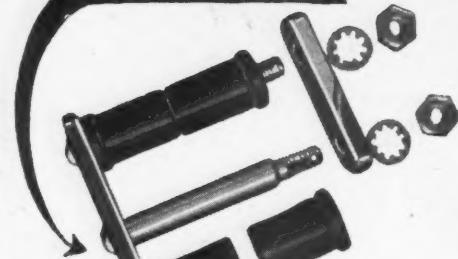
TACHOGRAPHES . . . ELECTRIC MOTORS . . . TRANSFORMERS . . . INDUSTRIAL BRAKES

Wagner **WE** **Electric**

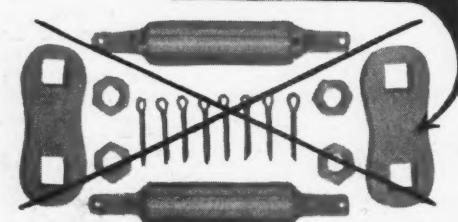
"CUSHION RIDE"
TRADE MARK REG.

RUBBER SHACKLES

THIS SHACKLE



REPLACES THIS



Now! Almost every 1946 car is using Rubber Shackles. We offer the genuine "Cushion Ride" Shackle for replacement on Ford and Mercury, Chevrolet, Plymouth, Chrysler, Dodge, DeSoto, etc.

- Stops "Jitterbug Ride" — Permits old cars to have that New, Quiet "Cushion Ride".
- Genuine NEOPRENE Bushings — Oil and Wear Resisting.
- Completely Cushions and Insulates frame from axle.
- Replace old, obsolete shackles.
- Silent in Operation — No lubrication required.
- Easily and Quickly Installed!

Available Now—for

FORD 1928-42 except '33-'34; CHEV. 1934-42, also fits other cars; PLYMOUTH 1935-42 and Chrysler Group.

Expertly made of quality materials throughout. The rubber bushings are molded to correct size and properly cured for easy, perfect fit.

Insist on "Cushion Ride" Shackles because the Neoprene Bushings stand up and deliver long life for complete customer satisfaction.

Send for Catalog

New catalog just off the press! Illustrates our many fast selling items ready for delivery, including Water Pumps and Kits, Solenoid Starter Unit, King Bolt Sets, Shock Links, Special Service Switches, etc.

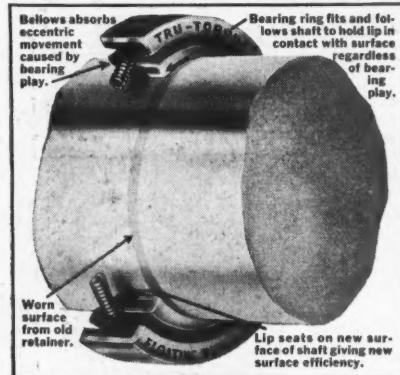
Sold Thru
Jobbers Only



AUTOMOTIVE MAN'FG. CO., INC.
1050 W. HUBBARD ST. CHICAGO 22, ILL.



STOP GREASE with "TRU-TORQUE" FLOATING RETAINERS



For Rear Wheel Outers Only
No. F-1—1928 thru 1937 Ford Passenger & 1/2 Ton Truck, Mercury and Lincoln Zephyr
No. F-2—1938 thru 1942 Lincoln Zephyr
No. S-100—All Studebaker Champions

List Price 80c

IMMEDIATE DELIVERY THRU YOUR JOBBER
or MAIL COUPON TODAY!

Ship One Carton (12 seals) as checked herewith:
 F-1 F-2 S-100

Delivery will be made thru Jobber named below or by nearest wholesaler.

Name.....

Address.....

City & State.....

Preferred Jobber.....

Manufactured By OTTO-ITEMS, Inc.

4390 Olive St. St. Louis 8, Mo.

When writing to advertisers please mention Motor Age

"MOGULOID
—THE SENSATIONAL
CRACKED BLOCK
COLLOIDAL THAT
IS SWEEPING
THE COUNTRY"



It's Pure — It's All Metallic

There's Nothing Else Like It.

Moguloid is a scientifically formulated product, blended with pure copper and chrome metallic flour. Contains no deteriorating vegetable matter which plugs, ferments and then comes out. Stops leaks fast in cooling systems, cracked blocks or heads—is permanent and makes a satisfied customer remember your service.

Order your supply from your jobber today.

NATIONALLY ADVERTISED

DOES THE JOB OR YOUR MONEY BACK

Moguloid
COMPANY OF AMERICA

Division of Metallizing Co. of America
1330 W. Congress St., Chicago 7, Illinois



MOTOR AGE

The Spotlight
is on the

Insulator

are
the most
popular
among
spark plug
manufacturers

**Samples
Sent
for your
Testing**

Because
they
have been
ignition
engineered
by
ceramic
specialists
for over
31 years,
**FRENCHTOWN
INSULATORS**

**FRENCHTOWN
PORCELAIN
COMPANY**

Sales Office
8 Muirhead Avenue,
Trenton 9, N. J.

Factory
Frenchtown, N. J.

**FRENCHTOWN
INSULATORS**

AUTO MECHANICS LIBRARY



1540 PAGES



1600 PAGES

A
READY
REFERENCE

4
EACH
PAY ONLY
\$1. A MONTH

MECHANICS, STEP UP YOUR OWN SKILL with the facts and figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in a handy form. Fully Illustrated and Easy to Understand. Highly Endorsed. Check the book you want for 7 days' Free Examination. Send No Money. Nothing to pay postman. If satisfied pay only \$1 a month until purchase price is paid.

Get This Information For Yourself, Mail Coupon Today.
No Obligation Unless Satisfied. ASK TO SEE THEM.

CUT HERE

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AUDEL, Publishers, 49 W. 23 St., N.Y. 10
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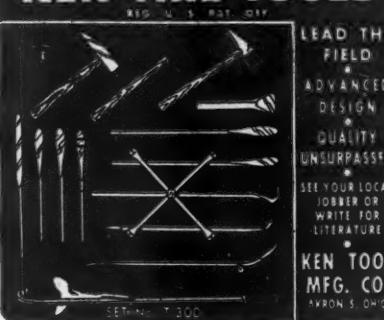
A portable soldering outfit with interchangeable tips. Uses acetylene only. Truly a body man's friend, slips on your welding torch.

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ADVANCED
DESIGN
QUALITY
UNSURPASSED
SEE YOUR LOCAL
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New Appointment

The appointment of L. W. Ward as assistant sales manager of Pontiac Motor Division in charge of the western half of the country has been announced by D. U. Bathrick, Pontiac general sales manager.

Ward joined General Motors in 1915 as a special representative in New York with another GM car division. He operated a dealership for this division from 1919 to 1923, at which time he returned to the division as special representative. In September, 1924, Ward resigned from GM to enter private business.

In January, 1942, Ward returned to St. Louis as zone manager where he served until November, 1944, at which time he became acting assistant sales manager in the Pontiac central office.



Smash-Proof

CREEPERS

Sold by all leading jobbers
HULBERT MANUFACTURING CO.
Ashtabula, O.



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Spray-Painting Equipment—
Spray Booths—Exhaust Fans
—Air Compressors—Hose and
Hose Connections—Oil Guns.
See your authorized DeVilbiss distributor
THE DEVILBISS COMPANY

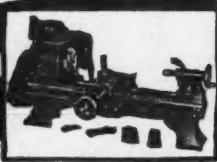
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Wolf's Head Oil Refining Co., Inc.
Oil City, Pa. or New York 10, N.Y.

for
PRECISION
REPAIR
WORK



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Model, Swing
Over Bed, 10½"

Logan

ENGINEERING CO.
Chicago 30, Illinois
A Name To Remember
When You Think of Better Lathes

PYRENE KEEPS 'EM ROLLING

with
Rugged, longer-
wearing Tire Chains
and
Handy, speedy Fire
Extinguishers



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NEWARK 8 NEW JERSEY

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Your NAPA Jobber
is a Good Man to Know!
NAPA
Is the Largest
Independent Organization
In the Parts Industry



Help stop this... with this



Photograph by P. A. Verzella, official police photographer, Pittsburgh.



Sell G-E, the lamp that
DOES NOT GROW DIM!

THREE-FIFTHS of all traffic fatalities (says National Safety Council) occur during dusk and darkness. That's why *your* customers need G-E—the lamp that DOES NOT GROW DIM!

Night safety requires more than good brakes. If headlamps grow dim, seeing distance is cut—often

without the driver's knowledge. If he can't see in time, he can't stop in time. And an object which would be visible when lights were *new* might be seen too late if lamps grew dim.

That can't happen with G-E Sealed Beam Headlamps. Lens and bulb are a single all-glass unit, hermetically

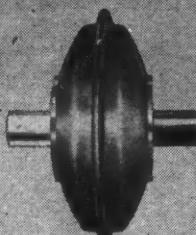
sealed. Air, moisture, dirt can't get in to dim light output. Result: G-E Sealed Beam Headlamps maintain 99% of original light output right up to the end of life.

Make night driving safer and help yourself to increased sales. Sell G-E—the lamp that DOES NOT GROW DIM!

"ALL-GLASS" SEALED BEAM

G-E LAMPS

GENERAL  ELECTRIC



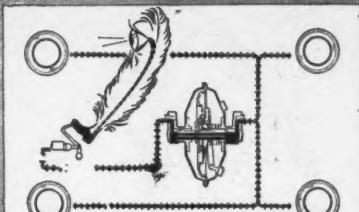
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BRAKING

KELSEY-HAYES WHEEL CO.
Detroit 32, Mich.

Sold to Automotive Distributors by
EMPIRE ELECTRIC BRAKE CO.
Newark 7, N. J.

VACDRAULIC is a Trade Mark of
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Write for the complete
Vacdralic catalog of
engineering and in-
stallation details today.

Ford Service Training Program Is Launched

Ford dealer service managers throughout the nation will receive information regarding improved service techniques and modern

methods for operating a service department in a training program now being launched in Dearborn, I. L. Pierce, manager of parts and service for the Ford Motor Company, announced recently.

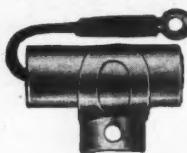
Carefully selected instructors from the company's five United States regions and the Dearborn branch are now being given a preparatory instruction course here. They will return to their respective regions and hold similar courses for branch instructors, who will carry the training program to the dealers' service organizations.

The course is designed to help service managers increase the efficiency of their departments and prepare for a competitive service market.

It is estimated that more than 17,800 representatives of the company's dealer organization will receive instruction.

Shurhit

Triple Seal Moisture-Proof
CONDENSERS



Ask your Shurhit jobber or write us for details on these super-quality replacement parts. Complete Shurhit line includes Condensers, Contact Points, Rotors, Caps, Coils, Brushes, Cut-Outs, Switches, and Spark Plugs.

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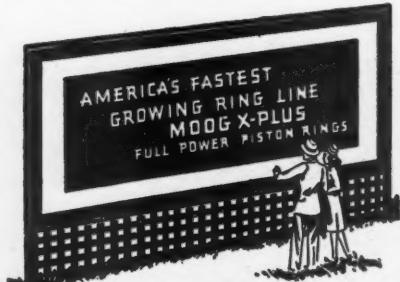
STOP
PISTON SLAP
OIL PUMPING
MOTOR NOISE
WITH
MASTER RECAMS

MASTER RECAMS are individually designed for all late model cars; easily installed without removing pistons. The profitable way to Stop Piston Slap, Oil Pumping and Motor Noise.

50¢ EACH

REGULAR DISCOUNTS TO JOBBERS AND DEALERS

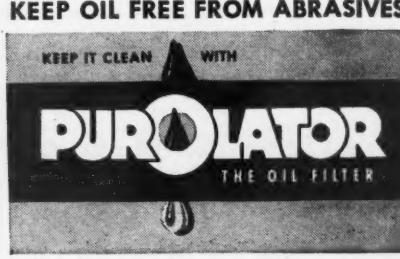
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You'll stick to
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Service Springs
FOR ALL CARS AND TRUCKS

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GUARANTEED AUTOMOTIVE CHEMICALS
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Good Service
means GOOD BUSINESS!

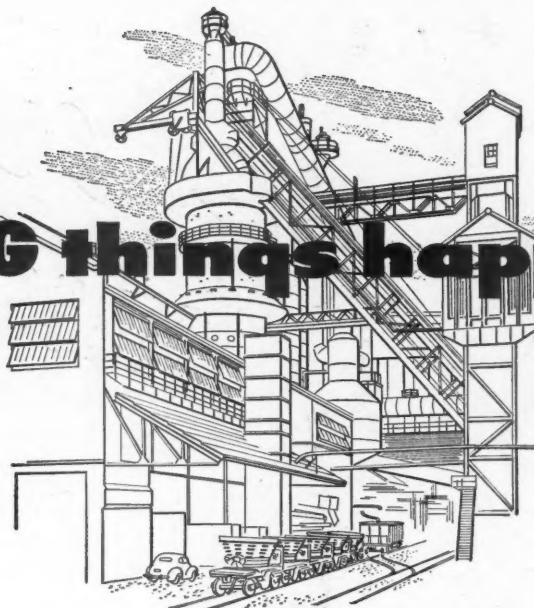
**HANSEN
AUTOMOTIVE
EQUIPMENT MEANS
BETTER SERVICE!**

The way to influence new customers and hold the old ones is by service and that is the most important thing a service station has to sell. Hansen modern automotive airline equipment is designed and engineered to do a service job better and more economically. The Hansen Air Hose Coupling has been the standby of most of the service stations because it is simple and easy to operate and will not leak. All parts are fully protected consequently it can be used anywhere indoors or out. Push plug into socket it is connected and air is automatically turned on; slide sleeve back it is disconnected and air is automatically turned off. Full swivel action prevents kinking of hose. Hansen Jet Oiler is compact and is manually operated; projecting a solid jet of light or penetrating oil when plunger is depressed. Oil container has one quart capacity. All pump parts are enclosed in handle fully protected.

Send for free automotive catalog.

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MANUFACTURING CO.
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The BIG things happen at



Ford

OPERATORS' problems are the "meat" of Ford engineers. Before and during the designing of every new unit, representative users sit down at the drafting table with Ford engineers and state their problems and expectations. And it is this consumer viewpoint, built into everything that bears the Ford name, that makes Ford a favorite with all kinds of customers.

Here is an interesting example of a tough problem Ford engineers licked for a special customer . . . Uncle Sam.



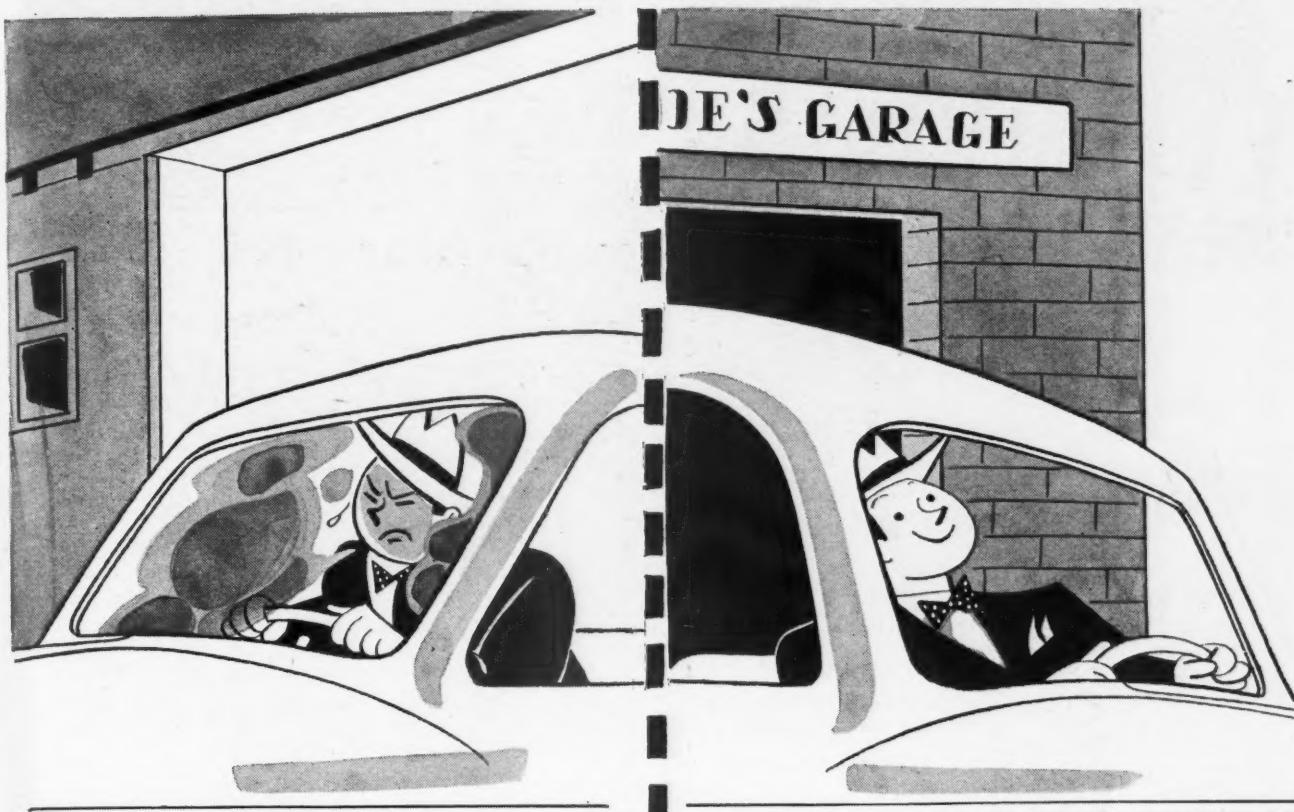
FORD SILVALOY BEARINGS ADD THOUSANDS OF MILES TO LIFE OF NEW FORD TRUCKS



Early in the war, it was discovered that the best wartime engine bearings failed in military vehicles operated at peak performance for long periods of time. Army Ordnance asked Ford to find a bearing that could stand heavy wartime loads for long punishing hours. The result was Ford's Silvaloy bearing. A bearing so tough it lasts three times as long as ordinary bearings—even under the worst conditions. Tested in heavy-duty trucks, Silvaloy bearings gave 50,000 miles of service without measurable wear. Now, the new Ford Trucks are equipped with Silvaloy bearings . . . another contribution to the Ford tradition: more miles of trouble-free transportation at lower costs.

Ford

F O R D M O T O R C O M P A N Y



When they come in squinting...

Send them out smiling...

Suggest replacement with L·O·F SAFETY PLATE GLASS

Many a car owner may have given up caring how the old bus looks.

But when it comes to safety, he's likely to be more concerned. Unfortunately, he often needs a reminder.

That's why it pays to mention glass replacement. Point out the greater safety and eye comfort in having clearer windshield and windows.

Let customers know that you use genuine L·O·F Hi-Test Safety *Plate* Glass. Remind them that this glass provides maximum clarity and freedom from distortion because its two panes

are ground and polished—that it's safer glass because these two panes are laminated with a tough plastic.

If you do the work yourself, ask your L·O·F Distributor to keep you stocked with the most-used part numbers. If you send the work out, choose a shop that uses genuine L·O·F Safety *Plate* Glass. In either case, be sure that the stenciled identification, "L·O·F Hi-Test Safety *Plate* Glass," is visible after installation. Libbey-Owens-Ford Glass Company, 7376 Nicholas Building, Toledo 3, Ohio.

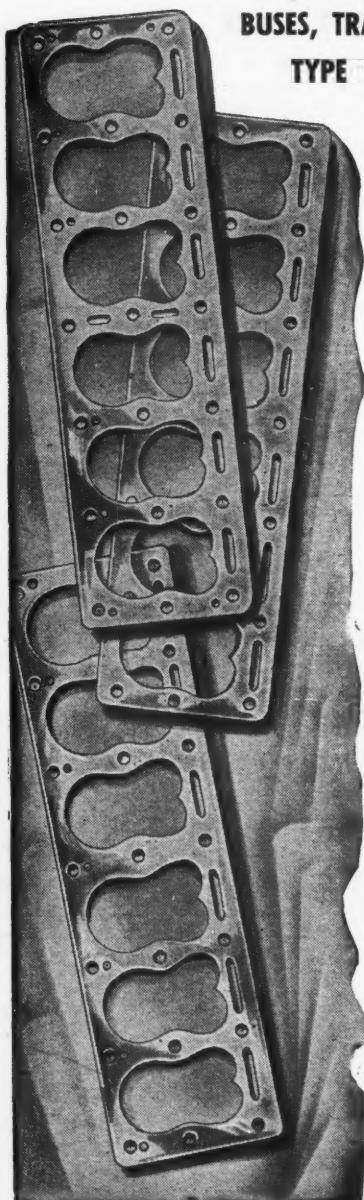
WHEREVER VISION IS IMPORTANT
USE L·O·F *Polished Plate* GLASS



LIBBEY·OWENS·FORD
a Great Name in GLASS



**GASKETS FOR PASSENGER CARS,
BUSES, TRACTORS—FOR EVERY
TYPE OF INSTALLATION**



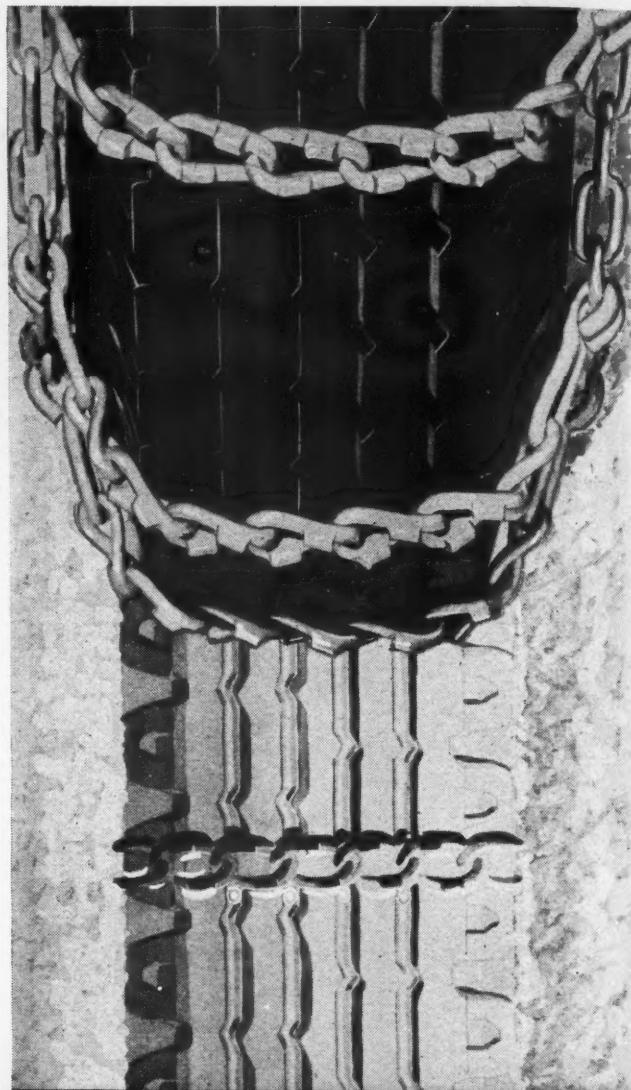
Gaskets of highest quality—made from finest materials—of all approved types of construction. Gaskets for every need, including the famous Fitzgerald Bulldog Gasket—a tougher gasket for a tough job—best for heavy duty service and high compression motors.

Install Fitzgerald Gaskets. That means 100 per cent gasket performance for your customers, profitable business for you.

Contact your Fitzgerald jobber for service. The Fitzgerald Manufacturing Company, Torrington, Conn. — Branches, Chicago and Los Angeles — Canadian FITZGERALD, Limited, Toronto.

**FITZGERALD
GASKETS**

THE COMPLETE LINE THAT COMPLETELY SATISFIES



BETTER TRACTION ASSURED!

Campbell Lug-Reinforced Tire Chains

The exclusive, patented* saw-tooth lugs of Campbell Lug-Reinforced Tire Chains dig right into snow and ice to assure positive traction. These radically different chains mean safe starts and stops without dangerous slip and skid. What's more, tough, hard-wearing steel, and one-piece construction, mean increased chain mileage. International Chain and Mfg. Company, York, Pennsylvania.



CAMPBELL
Lug-Reinforced
TIRE CHAINS



THE CHAIN WITH THE SAW-TOOTH GRIP

*U. S. Pat. No. 2,093,547—Canadian Pat. No. 223,568



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A STAR IN OUR CROWN . . . MONEY IN YOUR POCKET

MORE precious to this company than all the physical assets is UNITED STATES TRADITIONAL QUALITY . . . more precious to you is the quality which puts money in your pocket because the tools stand out as superb examples of the toolmaker's craft.

Put this to the test . . . do as leaders in your industry have been doing for 48 years . . . respect the GOOD MECHANICS' CHOICE . . . depend on

UNITED STATES ELECTRICAL TOOLS FOR PRODUCTION AND MAINTENANCE

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For all passenger cars, large trucks and tractors. To recondition any type valve seat quickly and accurately. A self-contained machine shop in large hardwood box with ball bearing stone holders and heavy duty driving unit.

1/4" HEAVY DUTY DRILL Model 14HD

Unusually powerful, built to withstand the most severe production service. Super-powered universal motor and 100% anti-friction bearings assure long life and low maintenance cost.

1/2" COMMANDER DRILL Model 1C02

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and other information



MODEL 14HD
1/4" HEAVY DUTY DRILL



MODEL 2000
VALVE SEAT GRINDER SET



MODEL 1C02
1/2" COMMANDER DRILL



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TO THE
Appearance
OF ANY CAR!

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PROFIT-PRODUCING!**

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PRODUCTS CO.

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Make up the recommended mixture of Oakite Composition No. 9 and distillate. Brush on over the paper covering and allow to soak for required period. Then note how easily the paper strips off. Wash away the remaining adhesive with a cloth saturated with the mixture. Dry with a clean, soft rag and the job is done.

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OAKITE Specialized CLEANING
MATERIALS • METHODS • SERVICE • FOR EVERY CLEANING REQUIREMENT

ESSENTIAL for 25,000,000 Cars!

Klemm

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with the Famous CHEMISTONE UNIT—
the Original Controlled Porosity Element



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Ingenious New Technical Methods

To Help You with Your
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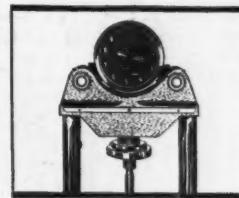


Portable Tester Checks Tensions Up To 10,000 lbs.—Right at the Workbench!

Standing only 37" high, weighing but 137 lbs., the Dillon Universal Tester checks wire, copper, aluminum, fabrics, steel, etc. for tensile, transverse, compression and shear strengths. Available in 7 capacities, with interchangeable dynamometers, the Universal will test from 0 to 10,000 lbs. Special gripping jaws are made for every requirement.

The Universal Tester may be either hand or motor operated. No special training is needed to record accurate results instantly on the dynamometer. It is compact, simple, inexpensive—designed for small shops and plants everywhere.

Tests prove that workers, too, undergo strain and nervous tension on the job. That's why many factories urge workers to chew gum. Workers can chew Wrigley's Spearmint Gum right on the job—even when hands are busy. And the act of chewing helps relieve monotony—helps keep workers alert, thus aiding them to do a better job with greater ease and safety.



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AA-79

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A FAST MOVING PROFITABLE ITEM!

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Profit comes without trouble when you handle these drop forged, heat treated Steel Load Binders.

They are guaranteed against failure under normal usage. Type B is for heavy hauling and Type J is for general hauling. Profit is good and selling prices are low. If you want to know more about this profitable item, write: Norton Equipment Company, Inc., P. O. Box 1185, Houston 1, Texas



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TRUCKS • BUSES • PASS. CARS

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D-5180

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AUTOMOTIVE
TONICS

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and it works as sweet!

Stops over-heating . . . smooths motor operation . . . Lime-Out thoroughly dissolves all trace of rust, scale, lime and sludge from the cooling system.

ONE EASY, INEXPENSIVE OPERATION

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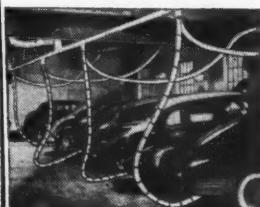
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CHICAGO 5, ILL.

STOP BREATHING POISON GAS!

Get Rid of Garage Fumes this Simple, Inexpensive Way

What you have been waiting for—the final successful solution to your garage ventilation problem. All available in a packaged kit, ready to install.

Complete Packaged KIT
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DECATUR



- Removes gas fumes at source (exhaust pipe).
- Simple installation—no change or alteration of existing facilities.
- Not in your way—instantly in use or out of way when you don't need it.
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Write for Circular

National System of Garage Ventilation
Dept. E, 333 Broadway
DECATUR ILLINOIS

Range up to 250 lbs.
PRICE \$45

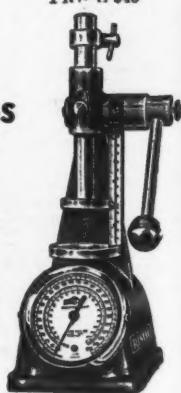
1946 MODEL RIMAC SPRING TESTER For VALVE and CLUTCH SPRINGS

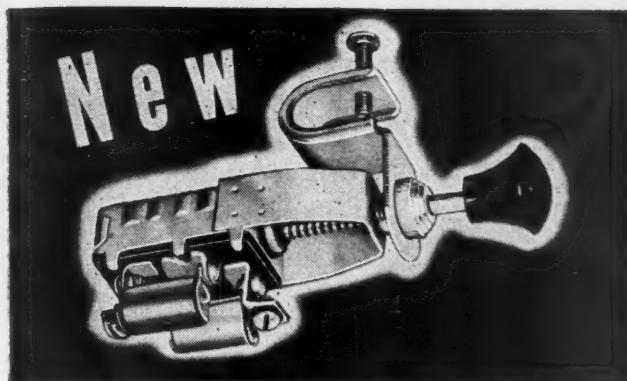
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Enables you to test all valve springs for correct and uniform tension, insuring top engine performance and elimination of fuel waste. Complete Valve Spring Tension Chart FREE with every Tester.

Used in production and recommended for service work by leading manufacturers of automobile, airplane, truck, and tractor motors.

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A post-war engineering achievement that will make money for you. The advanced suspension of the "floating" resistance unit practically eliminates breakage from the usual causes of expansion, contraction, and severe road jar. Has a positive type 3 speeds, attractive plastic knob, heavier wiring terminals, precision and machined fittings. Highest quality of workmanship and materials. Available in either "Thru-Dash" or "Clamp-On" Type. Ask your Jobber TODAY.

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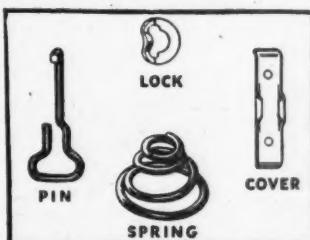
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"PERFECT"

Brake Shoe Parts
to Fit All Chevrolets
1936-42

Offered in 3 Assortments,
small and large.



"PERFECT" BRAKE SHOE HOLD-DOWN PARTS

Three parts—Pin, Spring and Cup, for assembling complete unit. Offered in 4 Assortments, small and large. Also in convenient "Kar-Kits" as illustrated.

From your jobber. Write us for particulars.

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Each month, more SpeedWay Drills come off the production line; are being shipped each day. But, frankly, though we are beginning to cut into our enormous pile of back orders, there's a deal of waiting still for a lot of people who are ordering SpeedWay Tools today. However, because they are worth waiting for, we suggest that you place your order now with your local SpeedWay dealer for earliest possible delivery.

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No. 89 equipped with
Snap-Release Chuck.
No. 89-J with
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Commutators are machined with bearing surfaces of shafts riding in adjustable bronze jaws, thus assuring commutators being absolutely concentric with shafts. Capacity— $\frac{1}{4}$ " to 1". Furnished with #1, 2, or 3 Morse taper arbor.

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Armature Lathe & Undercutter

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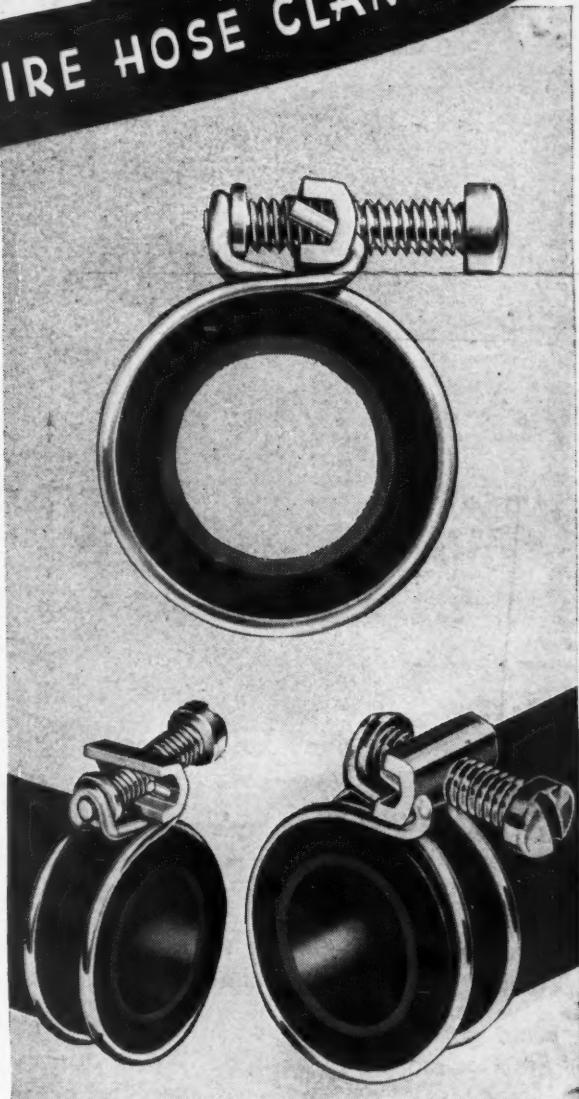
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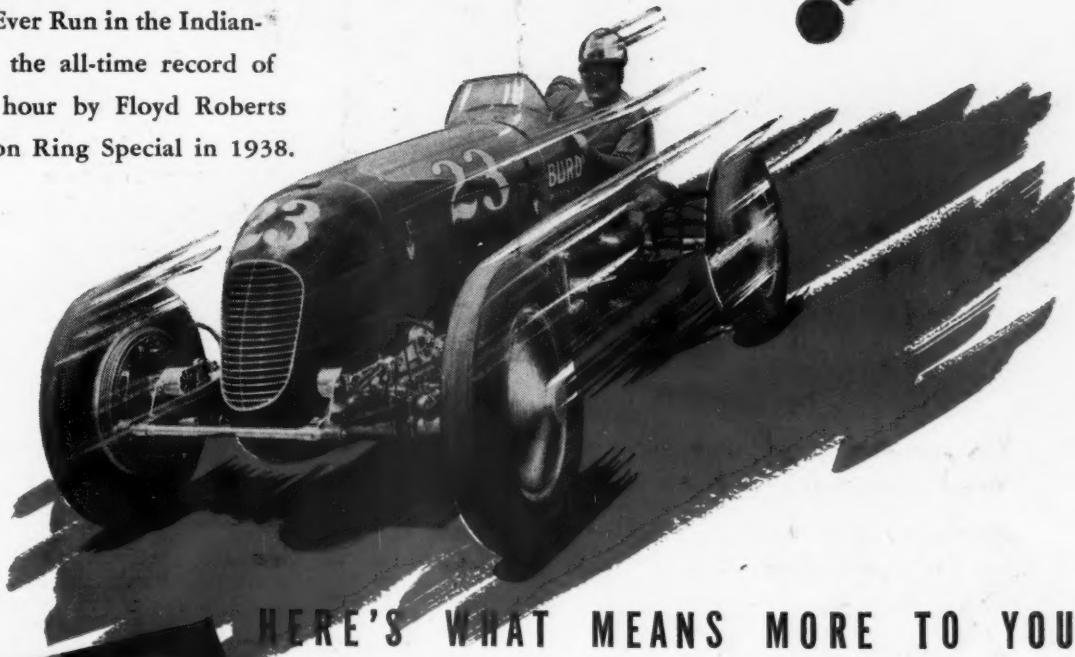
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